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011012920 **Image available**

WPI Acc No: 1996-509870/199651

XRPX Acc No: N96-429741

Image forming appts. with paper sorter e.g. copier - has controller which directs sorter during non-classifying position of paper when auto sorting mode is set and recording paper is set to be one

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Number of Countries: 001 Number of Patents: 001

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
JP 8262931	A	19961011	JP 9563098	A	19950322	199651 B

Priority Applications (No Type Date): JP 9563098 A 19950322

Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
JP 8262931	A	10		G03G-021/00	

Abstract (Basic): JP 8262931 A

The appts. includes an image forming unit (6) which produces an image in a recording paper. A paper sorter (80) selectively classifies the predetermined position of the recording paper. The operation of the division unit is interlocked with the operation of the image forming unit.

A mode setting unit sets up the auto sorting mode which classifies the recording paper in the division position. A sensor (9) detects the number of recording papers to be used. When the auto sorting mode is set and the recording paper is set to be one, the sorter is controlled by a controller.

ADVANTAGE - Automatically classifies recording paper when auto sorting mode is set up. Prevents futility of paper during re-copy.

Dwg.1/5

Title Terms: IMAGE; FORMING; APPARATUS; PAPER; SORT; COPY; CONTROL; DIRECT; SORT; NON; CLASSIFY; POSITION; PAPER; AUTO; SORT; MODE; SET; RECORD; PAPER; SET; ONE

Derwent Class: P84; Q36; S06; T04

International Patent Class (Main): G03G-021/00

International Patent Class (Additional): B65H-029/60; B65H-039/11; G03G-015/00

File Segment: EPI; EngPI

?

(19)日本国特許庁 (JP)

(12) 公開特許公報 (A)

(11)特許出願公開番号

特開平8-262931

(43)公開日 平成8年(1996)10月11日

(51)Int.Cl. ⁶	識別記号	序内整理番号	F I	技術表示箇所
G 03 G 21/00	3 8 4		G 03 G 21/00	3 8 4
B 65 H 29/60			B 65 H 29/60	B
39/11			39/11	N
G 03 G 15/00	1 0 7	5 3 0	G 03 G 15/00	1 0 7
				5 3 0

審査請求 未請求 請求項の数 6 OL (全 10 頁)

(21)出願番号 特願平7-63098

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(22)出願日 平成7年(1995)3月22日

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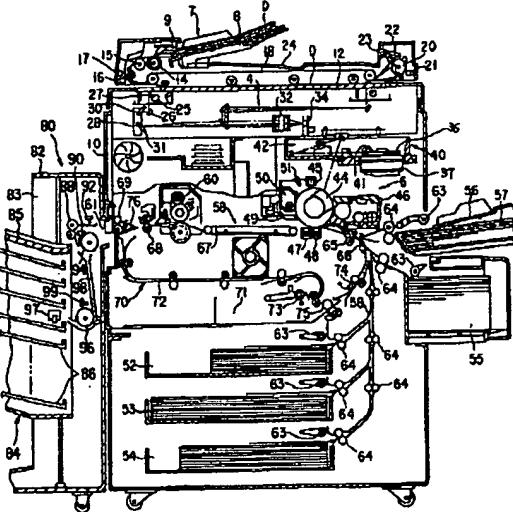
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(54)【発明の名称】 画像形成装置および画像形成方法

(57)【要約】

【目的】 この発明の目的は、オートソートモードが設定された場合における用紙の取り忘れ、再コピー等による用紙の無駄を防止することができる画像形成装置を提供することにある。

【構成】 デジタル複写機は、原稿を所定の読み取り位置へ自動的に供給するADF7、読み取り位置へ供給された原稿から画像を読み取るスキャナ4、読み取られた画像を用紙に形成する画像形成部6、および画像が形成された用紙を所定位置へ区分けするソーター80を備えている。ADFは、原稿が1枚あるいは複数枚であることを検知するエンブティセンサ9を有する。オートソートモードにおいて、置数1が設定されまたは原稿枚数が1枚であることが検知された場合、ソートモードを一時的に解除し、用紙をノンソートビン85に排出する。



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【特許請求の範囲】

【請求項1】 記録媒体に画像を形成する画像形成手段と、
 上記画像形成手段により画像が形成された記録媒体を非区分け位置および区分け位置のいずれかに選択的に区分けする区分け手段と、
 上記画像形成手段が動作されることに伴って、上記区分け手段を自動的に動作させ、画像が形成された記録媒体を上記区分け位置へ区分けするオートソートモードを設定するモード設定手段と、
 上記画像形成手段により画像が形成される記録媒体の置数を設定する置数設定手段と、
 上記オートソートモードが設定されている際、上記置数設定手段により設定された置数が1である場合に上記画像形成手段により画像が形成された記録媒体を上記非区分け位置へ区分けするよう上記区分け手段を制御する制御手段と、
 を備えていることを特徴とする画像形成装置。

【請求項2】 原稿を自動的に読み取り位置へ供給する供給手段と、
 上記読み取り位置に供給された原稿から画像を読み取る読み取り手段と、
 上記読み取り手段により読み取られた画像を記録媒体に形成する画像形成手段と、
 上記画像形成手段により画像が形成された記録媒体を非区分け位置および区分け位置のいずれかに選択的に区分けする区分け手段と、
 上記画像形成手段が動作されることに伴って、上記区分け手段を自動的に動作させ、画像が形成された記録媒体を上記区分け位置へ区分けするオートソートモードを設定するモード設定手段と、
 上記供給手段により供給される原稿の枚数を検知する検知手段と、
 上記オートソートモードが設定されている際、上記検知手段により原稿が1枚であることが検知された場合に上記画像形成手段により画像が形成された記録媒体を上記非区分け位置へ区分けするよう上記区分け手段を制御する制御手段と、
 を備えていることを特徴とする画像形成装置。

【請求項3】 原稿を自動的に読み取り位置へ供給する供給手段と、
 上記読み取り位置に供給された原稿から画像を読み取る読み取り手段と、
 上記読み取り手段により読み取られた画像を記録媒体に形成する画像形成手段と、
 上記画像形成手段により画像が形成された記録媒体を非区分け位置および区分け位置のいずれかに選択的に区分けする区分け手段と、
 上記画像形成手段が動作されることに伴って、上記区分け手段を自動的に動作させ、画像が形成された記録媒体

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を上記区分け位置へ区分けするオートソートモードを設定するモード設定手段と、

上記画像形成手段により画像が形成される記録媒体の置数を設定する置数設定手段と、

上記供給手段により供給される原稿の枚数を検知する検知手段と、

上記オートソートモードが設定されている際、上記検知手段により原稿が1枚であることが検知された場合および上記置数設定手段により設定された置数が1である場合に上記画像形成手段により画像が形成された記録媒体を上記非区分け位置へ区分けするよう上記区分け手段を制御する制御手段と、

を備えていることを特徴とする画像形成装置。

【請求項4】 画像が形成された記録媒体を非区分け位置および区分け位置のいずれかに選択的に区分けして排出するものにおいて、
 画像が形成された記録媒体を自動的に上記区分け位置に区分けするオートソートモードを設定し、
 画像を形成する記録媒体の置数を設定し、
 上記置数に応じて記録媒体に画像を形成し、
 上記置数が1である場合に画像が形成された記録媒体を上記非区分け位置に排出する画像形成方法。

【請求項5】 画像が形成された記録媒体を非区分け位置および区分け位置のいずれかに選択的に区分けして排出するものにおいて、
 原稿を自動的に読み取り位置へ供給する供給手段へ原稿を装填し、
 上記供給手段により供給される原稿の枚数を検知し、
 画像の形成に伴って、画像が形成された記録媒体を上記区分け位置へ自動的に区分けするオートソートモードを設定し、

上記供給手段により原稿を上記読み取り位置へ供給し、
 上記読み取り位置に供給された原稿から画像を読み取り、
 読取られた画像を記録媒体に形成し、
 上記供給手段により供給される原稿が1枚である場合に、画像が形成された記録媒体を非区分け位置に排出する画像形成方法。

【請求項6】 画像が形成された記録媒体を非区分け位置および区分け位置のいずれかに選択的に区分けして排出するものにおいて、
 原稿を自動的に読み取り位置へ供給する供給手段へ原稿を装填し、
 上記供給手段により供給される原稿の枚数を検知し、
 画像の形成に伴って、画像が形成された記録媒体を上記区分け位置へ自動的に区分けするオートソートモードを設定し、
 画像が形成される記録媒体の置数を設定し、
 上記供給手段により原稿を上記読み取り位置へ供給し、
 上記読み取り位置に供給された原稿から画像を読み取り、
 読取られた画像を上記置数に応じて記録媒体に形成し、

上記置数が1である場合および上記供給手段により供給される原稿が1枚である場合に、画像が形成された記録媒体を非区分け位置に排出する画像形成方法。

【発明の詳細な説明】

【0001】

【産業上の利用分野】この発明は、画像が形成された用紙を区分けするソーターを備えた画像形成装置に関する。

【0002】

【従来の技術】画像形成装置として、例えば、原稿を所定の読み取り位置へ自動的に供給する自動原稿送り装置（以下、ADFと称する）と、画像が形成された用紙を自動的に区分けして集積するソーターと、を備えた複写機が知られている。このような複写機において、ソートモードが設定されている場合、ADFにセットされた原稿は、画像読み取り位置へ1枚づつ順に供給され、画像読み取り部によって画像が読み取られる。そして、読み取られた画像に応じて、画像形成部により記録媒体としての用紙に画像が形成され、画像が形成された用紙は複数の区分け位置（ソートピン）へ区分けして集積される。

【0003】このような複写機においては、ADFに原稿が載置されたことを条件として、画像が形成された用紙の全てを自動的に複数のソートピンへ区分けするオートソートモードを設定することができる。

【0004】

【発明が解決しようとする課題】しかしながら、従来の複写機においては、オートソートモードが設定されている場合、ADFに載置された原稿が1枚である場合や置数が1である場合であっても、画像が形成された用紙は全て複数のソートピンに区分けして排紙される。通常、原稿が1枚の場合や置数が1の場合は排出された用紙を区分けする必要がなく、用紙がソートピンに排出されてしまった場合、ユーザーは、用紙が非区分け位置（ノンソートピン）に排紙されるものと勘違いし、複写した用紙を取り忘れる問題がある。或いは、用紙が排紙されていないものと勘違いし、再コピーをしてしまい用紙の無駄を生じる問題がある。

【0005】この発明は、以上の点に鑑みなされたもので、その目的は、オートソートモードが設定された場合における用紙の取り忘れ、再コピー等による用紙の無駄を防止することができる画像形成装置を提供することにある。

【0006】

【課題を解決するための手段】上記目的を達成するため、この発明に係る画像形成装置は、記録媒体に画像を形成する画像形成手段と、上記画像形成手段により画像が形成された記録媒体を非区分け位置および区分け位置のいずれかに選択的に区分けする区分け手段と、上記画像形成手段が動作されることに伴って、上記区分け手段を自動的に動作させ、画像が形成された記録媒体を上記

区分け位置へ区分けするオートソートモードを設定するモード設定手段と、上記画像形成手段により画像が形成される記録媒体の置数を設定する置数設定手段と、上記オートソートモードが設定されている際、上記置数設定手段により設定された置数が1である場合に上記画像形成手段により画像が形成された記録媒体を上記非区分け位置へ区分けするよう上記区分け手段を制御する制御手段と、を備えている。

【0007】また、この発明に係る画像形成装置は、原稿を自動的に読み取り位置へ供給する供給手段と、上記読み取り位置に供給された原稿から画像を読み取る読み取り手段と、上記読み取り手段により読み取られた画像を記録媒体に形成する画像形成手段と、上記画像形成手段により画像が形成された記録媒体を非区分け位置および区分け位置のいずれかに選択的に区分けする区分け手段と、上記画像形成手段が動作されることに伴って、上記区分け手段を自動的に動作させ、画像が形成された記録媒体を上記区分け位置へ区分けするオートソートモードを設定するモード設定手段と、上記供給手段により供給される原稿の枚数を検知する検知手段と、上記オートソートモードが設定されている際、上記検知手段により原稿が1枚であることが検知された場合に上記画像形成手段により画像が形成された記録媒体を上記非区分け位置へ区分けするよう上記区分け手段を制御する制御手段と、を備えている。

【0008】また、この発明に係る画像形成装置は、原稿を自動的に読み取り位置へ供給する供給手段と、上記読み取り位置に供給された原稿から画像を読み取る読み取り手段と、上記読み取り手段により読み取られた画像を記録媒体に形成する画像形成手段と、上記画像形成手段により画像が形成された記録媒体を非区分け位置および区分け位置のいずれかに選択的に区分けする区分け手段と、上記画像形成手段が動作されることに伴って、上記区分け手段を自動的に動作させ、画像が形成された記録媒体を上記区分け位置へ区分けするオートソートモードを設定するモード設定手段と、上記画像形成手段により画像が形成された記録媒体の置数を設定する置数設定手段と、上記供給手段により供給される原稿の枚数を検知する検知手段と、上記オートソートモードが設定されている際、上記検知手段により原稿が1枚であることが検知された場合および上記置数設定手段により設定された置数が1である場合に上記画像形成手段により画像が形成された記録媒体を上記非区分け位置へ区分けするよう上記区分け手段を制御する制御手段と、を備えている。

【0009】また、この発明によれば、画像が形成された記録媒体を非区分け位置および区分け位置のいずれかに選択的に区分けして排出するものにおいて、画像が形成された記録媒体を自動的に上記区分け位置に区分けするオートソートモードを設定し、画像を形成する記録媒体の置数を設定し、上記置数に応じて記録媒体に画像を

形成し、上記置数が1である場合に画像が形成された記録媒体を上記非区分け位置に排出する。

【0010】また、この発明によれば、画像が形成された記録媒体を非区分け位置および区分け位置のいずれかに選択的に区分けして排出するものにおいて、原稿を自動的に読み取り位置へ供給する供給手段へ原稿を装填し、上記供給手段により供給される原稿の枚数を検知し、画像の形成に伴って、画像が形成された記録媒体を上記区分け位置へ自動的に区分けするオートソートモードを設定し、上記供給手段により原稿を上記読み取り位置へ供給し、上記読み取り位置に供給された原稿から画像を読み取り、読み取られた画像を記録媒体に形成し、上記供給手段により供給される原稿が1枚である場合に、画像が形成された記録媒体を非区分け位置に排出する。

【0011】また、この発明によれば、画像が形成された記録媒体を非区分け位置および区分け位置のいずれかに選択的に区分けして排出するものにおいて、原稿を自動的に読み取り位置へ供給する供給手段へ原稿を装填し、上記供給手段により供給される原稿の枚数を検知し、画像の形成に伴って、画像が形成された記録媒体を上記区分け位置へ自動的に区分けするオートソートモードを設定し、画像が形成される記録媒体の置数を設定し、上記供給手段により原稿を上記読み取り位置へ供給し、上記読み取り位置に供給された原稿から画像を読み取り、読み取られた画像を上記置数に応じて記録媒体に形成し、上記置数が1である場合および上記供給手段により供給される原稿が1枚である場合に、画像が形成された記録媒体を非区分け位置に排出する。

【0012】

【作用】この発明に係る画像形成装置によれば、画像形成手段により画像が形成された記録媒体を区分け手段により自動的に区分け位置へ区分けするオートソートモードが設定される。また、置数設定手段により画像が形成された記録媒体の置数が設定される。そして、上記オートソートモードが設定されていることを条件として、上記置数が1である場合に、画像が形成された記録媒体を区分けしない非区分け位置へ排出するよう制御手段により区分け手段を制御する。

【0013】また、供給手段により供給される原稿が1枚或いは複数枚であることを検知手段により検知し、上記オートソートモードが設定されていることを条件として、原稿の枚数が1枚である場合に、画像が形成された記録媒体を区分けしない非区分け位置へ排出するよう制御手段により区分け手段を制御する。これにより、オートソートモードが設定された場合における用紙の取り忘れを防止でき再コピー等による用紙の無駄を無くすことができる。

【0014】

【実施例】以下図面を参照しながら、この発明に係る画像形成装置をデジタル複写機に適用した実施例について

詳細に説明する。図1に示すように、デジタル複写機は装置本体10を備え、この装置本体10内には、後述する読み取り手段として機能するスキャナ4、および画像形成手段として機能する画像形成部6が設けられている。

【0015】装置本体10の上面には、本発明のモード設定手段および置数設定手段として作用する後述するコントロールパネル、および、読み取り対象物、つまり原稿Dが載置される透明なガラスからなる原稿載置台12が設けられている。また、装置本体10の上面には、原稿載置台12上に原稿を自動的に送る供給手段としての自動原稿送り装置7（以下、ADF7と称する）が配設されている。このADF7は、原稿載置台12に対して開閉可能に配設され、原稿載置台に載置された原稿Dを原稿載置台12に密着させる原稿押さえとしても機能する。

【0016】ADF7は、原稿Dがセットされる原稿トレイ8、原稿の有無を検出するとともに載置された原稿が一枚或いは複数枚のいずれであるかを検知する検知手段としてのエンブティセンサ9、原稿トレイ8から原稿を一枚づつ取り出すピックアップローラ14、取り出された原稿を搬送する給紙ローラ15、原稿の先端を整位するアライニングローラ対16、原稿の先端を検出するアライニングセンサ17、原稿載置台12のほぼ全体を覆うように配設された搬送ベルト18を備えている。そして、原稿トレイ8に上向きにセットされた複数枚の原稿は、その最も下の頁、つまり、最終頁から順に取り出され、アライニングローラ対16により整位された後、搬送ベルト18によって原稿載置台12の所定の読み取り位置へ搬送される。

【0017】ADF7において、搬送ベルト18を挟んでアライニングローラ対16と反対側の端部には、反転ローラ20、非反転センサ21、フラッパ22、排紙ローラ23が配設されている。後述するスキャナ4により画像情報の読み取られた原稿Dは、搬送ベルト18により原稿載置台12上から送り出され、反転ローラ20、フラッパ21、および排紙ローラ22を介してADF7上面の原稿排紙部24上に排出される。原稿Dの裏面を読み取る場合、フラッパ22を切換えることにより、搬送ベルト18によって搬送されてきた原稿Dは、反転ローラ20によって反転された後、再度搬送ベルト18により原稿載置台12上の所定位置に送られる。

【0018】装置本体10内に配設されたスキャナ4は、原稿載置台12に載置された原稿Dを照明する蛍光灯等の光源25および原稿Dからの反射光を所定の方向に偏向する第1のミラー26を有し、これらの光源25および第1のミラー26は、原稿載置台12の下方に配設された第1のキャリッジ27に取り付けられている。第1のキャリッジ27は、原稿載置台12と平行に移動可能に配置され、図示しない歯付きベルト等を介して駆動モータにより、原稿載置台12の下方を往復移動される。

【0019】また、原稿載置台12の下方には、原稿載置台12と平行に移動可能な第2のキャリッジ28が配設されている。第2のキャリッジ28には、第1のミラー26により偏向された原稿Dからの反射光を順に偏向する第2および第3のミラー30、31が互いに直角に取り付けられている。第2のキャリッジ28は、第1のキャリッジ27を駆動する歯付きベルト等により、第1のキャリッジ27に対して従動されるとともに、第1のキャリッジに対して、1/2の速度で原稿載置台12に沿って平行に移動される。

【0020】また、原稿載置台12の下方には、第2のキャリッジ28上の第3のミラー31からの反射光を集めする結像レンズ32と、結像レンズにより集束された反射光を受光して光電変換するCCDセンサ34などが配設されている。結像レンズ32は、第3のミラー31により偏向された光の光軸を含む面内に、駆動機構を介して移動可能に配設され、自身が移動することで反射光を所望の倍率で結像する。そして、CCDセンサ34は、入射した反射光を光電変換し、読み取った原稿Dに対応する電気信号を出力する。

【0021】一方、画像形成部6は、レーザ露光装置40を備えている。レーザ露光装置40は、光源としての半導体レーザ41と、半導体レーザ41から出射されたレーザ光を連続的に偏向するポリゴンミラー36と、ポリゴンミラーを所定の回転数で回転駆動するポリゴンモータ37と、ポリゴンミラーからのレーザ光を偏向して後述する感光体ドラムへ導く光学系42と、を備えている。

【0022】半導体レーザ41は、スキャナ4により読み取られた原稿Dの画像情報、あるいはファクシミリ送受信文書情報等に応じてオン・オフ制御され、このレーザ光はポリゴンミラー36および光学系42を介して感光体ドラムへ向けられ、感光体ドラム周面を露光走査することによりドラム周面上に静電潜像を形成する。

【0023】また、画像形成部6は、装置本体10のほぼ中央に配設された像担持体としての回転自在な感光体ドラム44を有し、感光体ドラム周面は、レーザ露光装置40からのレーザ光により露光され、所望の静電潜像が形成される。感光体ドラム44の周囲には、ドラム周面を所定の電荷に帯電させる帯電チャージャ45、感光体ドラム周面上に形成された静電潜像に現像剤としてのトナーを供給して所望の画像濃度で現像する現像器46、後述する用紙カセットから給紙された記録媒体、つまり、コピー用紙Pを感光体ドラムから分離させるための剥離チャージャ47を一体に有し、感光体ドラム44に形成されたトナー像を用紙Pに転写させる転写チャージャ48、感光体ドラム周面からコピー用紙を剥離する剥離爪49、感光体ドラム周面に残留したトナーを清掃する清掃装置50、および、感光体ドラム周面の除電する除電器51が順に配置されている。

【0024】装置本体10内の下部には、それぞれ装置本体から引出し可能な上段カセット52、中段カセット53、下段カセット54が互いに積層状態に配設され、各カセット内にはサイズの異なるコピー用紙が装填されている。これらのカセットの側方には大容量フィーダ55が設けられ、この大容量フィーダ55には、使用頻度の高いサイズのコピー用紙、例えば、A4サイズのコピー用紙が約3000枚収納されている。また、大容量フィーダ55の上方には、手差しトレイ56を兼ねた給紙カセット57が脱着自在に接着されている。

【0025】装置本体10内には、各カセットおよび大容量フィーダ55から感光体ドラム44と転写チャージャ48との間に位置した転写部を通じて延びる搬送路58が形成され、搬送路58の終端には定着装置60が設けられている。定着装置60に対向した装置本体10の側壁には排出口61が形成され、排出口61には排出されたコピー用紙を区分けする後述するソーター80が連結されている。

【0026】上段カセット52、中段カセット53、下段カセット54、給紙カセット57の近傍および大容量フィーダ55の近傍には、カセットあるいは大容量フィーダから用紙を一枚づつ取り出すピックアップローラ63がそれぞれ設けられている。また、搬送路58には、ピックアップローラ63により取り出されたコピー用紙Pを搬送路58を通して搬送する多数の給紙ローラ対64が設けられている。

【0027】搬送路58において感光体ドラム44の上流側にはレジストローラ対65が設けられている。レジストローラ対65は、取り出されたコピー用紙Pの傾きを補正するとともに、感光体ドラム44上のトナー像の先端とコピー用紙Pの先端とを整合させ、感光体ドラム周面の移動速度と同じ速度でコピー用紙Pを転写部へ給紙する。レジストローラ対65の手前、つまり、給紙ローラ64側には、コピー用紙Pの到達を検出するアーリニングセンサ66が設けられている。

【0028】ピックアップローラ63により各カセットあるいは大容量フィーダ55から1枚づつ取り出されたコピー用紙Pは、給紙ローラ対64によりレジストローラ対65へ送られる。そして、コピー用紙Pは、レジストローラ対65により先端が整位された後、転写部に送られる。転写部において、感光体ドラム44上に形成された現像剤像、つまり、トナー像が、転写チャージャ48により用紙P上に転写される。トナー像の転写されたコピー用紙Pは、剥離チャージャ47および剥離爪49の作用により感光体ドラム44周面から剥離され、搬送路58の一部を構成する搬送ベルト67を介して定着装置60に搬送される。そして、定着装置60によって現像剤像がコピー用紙Pに溶融定着した後、コピー用紙Pは、給紙ローラ対68および排紙ローラ対69により排出口61を通してソーター80へ導かれる。

【0029】搬送路58の下方には、定着装置60を通過したコピー用紙Pを反転して再びレジストローラ対65へ送る自動両面装置70が設けられている。自動両面装置70は、コピー用紙Pを一時的に集積する一時集積部71と、搬送路58から分岐し、定着装置60を通過したコピー用紙Pを反転して一時集積部71に導く反転路72と、一時集積部に集積されたコピー用紙Pを一枚づつ取り出すピックアップローラ73と、取り出された用紙を搬送路74を通してレジストローラ対65へ給紙する給紙ローラ75と、を備えている。また、搬送路58と反転路72との分岐部には、コピー用紙Pを排出口61あるいは反転路72に選択的に振り分ける振り分けゲート76が設けられている。

【0030】両面コピーを行なう場合、定着装置60を通過したコピー用紙Pは、振り分けゲート76により反転路72に導かれ、反転された状態で一時集積部71に一時的に集積された後、ピックアップローラ73および給紙ローラ対75により、搬送路74を通してレジストローラ対65へ送られる。そして、コピー用紙Pはレジストローラ対65により整位された後、再び転写部に送られ、コピー用紙Pの裏面にトナー像が転写される。その後、コピー用紙Pは、搬送路58、定着装置60、排紙ローラ69、および排出口61を介してソーター80へ導かれる。

【0031】以下、ソーター80について詳細に説明する。ソーター80は、排出口61に接続されているとともに装置本体10に並んで配置された筐体82を有している。装置本体10の反対側に位置した筐体82の側面は開口83を有している。また、筐体82内には、垂直方向に沿って昇降可能なソートユニット84が配設されている。ソートユニット84は、装置本体10から排出されたコピー用紙を集積するための多数のピンを有し、これらのピンは垂直方向に沿って積層状態に配設されている。

【0032】これらのピンは、最上部の非区分け位置に配置されたノンソートピン85、およびノンソートピン85の下方に所定の隙間を持って積層され区分け位置に配置された多数のソートピン86を含んでいる。そして、ノンソートピン85およびソートピン86は、開口83から筐体82の外方へ延出している。

【0033】また、筐体82内には、排出口61と対向して設けられ排紙ローラ対69によって送られたコピー用紙をノンソートピン86上に排出する一対の送りローラ88、排出口61と送りローラ対88との間に位置したフラッパ90、フラッパ90に隣接して設けられたガイドローラ94、および排出口61とフラッパ90との間に位置しコピー用紙の到達を検出する用紙センサ92が設けられている。

【0034】フラッパ90は、排紙ローラ69から送られてきたコピー用紙を送りローラ対88に導く排出位置

と、排紙ローラ69から送られてきたコピー用紙をソートピン86側へ導く区分け位置と、の間を回動自在に設けられ、後述するソレノイドにより両位置間を切り換える。

【0035】筐体82内において、ガイドローラ94の下方には区分けローラ96が配設され、ガイドローラ94と区分けローラ96との間には、フラッパ90により下方に向けられたコピー用紙を区分けローラ96へ導くガイド98と、コピー用紙の到達を検出する用紙センサ99と、が設けられている。

【0036】上記構成のソーター80によれば、フラッパ90が区分け位置に切り換えられている場合、装置本体10の排出口61から排出されたコピー用紙Pは、フラッパ90、ガイドローラ94およびガイド98により区分けローラ96へ送られる。そして、コピー用紙Pは、区分けローラ96により、これらの区分けローラと対向して位置するソートトレイ86上に排出される。従って、ソートユニット84を後述する昇降機構によって昇降駆動することにより、区分けローラ96と対向するソートトレイ86上に順次コピー用紙Pを出し、区分けすることができる。

【0037】次に、上述のように構成されたデジタル複写機により画像が形成された用紙の区分け動作を制御する制御系について説明する。図2に示すように、制御系は、制御手段としてのCPU100を備えている。CPU100には入力インターフェース102を介して、設定手段としてのコントロールパネル110、ADF7に設けられたエンプティセンサ9、フラッパ90の上流側に設けられた用紙センサ92、区分けローラ96の上流側に設けられた用紙センサ99、および制御データの格納されたROM112が接続されている。

【0038】また、CPU100には、出力インターフェース104を介して駆動コントローラ106が接続されている。駆動コントローラ106には、フラッパ90を上述した排出位置と区分け位置との間で切換えるソレノイド114、送りローラー88を駆動するモーター116、区分けローラー96を駆動するモーター118、および昇降機構122を作動してソートユニット84を昇降する昇降モーター120が接続されている。

【0039】尚、送りローラー88、フラッパ90、区分けローラー96、および昇降機構122を含むソーター80により本発明の区分け手段を構成している。次に、上述のように構成された本発明のデジタル複写機においてオートソートモードが設定された場合における用紙の区分け動作（第1の区分け動作）について図3を用いて説明する。尚、オートソートモードとは、ADF7に原稿が載置されたことを条件としてソーター80が自動的にソートモード（区分けモード）を選択することを言う。従って、オートソートモードが設定された場合には、画像が形成された用紙はその置数に応じてソートビ

ンに排紙される。また、ここで言う置数とは、1組（あるいは1枚）の原稿の画像を複写して得られる用紙の組数（枚数）を指し、例えば、複数の原稿がADF7に載置され、コントロールパネル110において置数3が設定された場合、各原稿の画像がそれぞれ3回づつ複写され、この複写された用紙が1乃至3段目のソートピンにそれぞれ組合わされて排紙される。

【0040】まず、デジタル複写機の初期設定として、コントロールパネル110を介して上述したオートソートモードが設定される（ステップ121）。そして、ADF4に原稿Dがセットされ（ステップ122）、コントロールパネル110を介して置数が設定され（ステップ123）、この置数に応じて複写動作が開始される（ステップ124）。

【0041】ステップ121に示すようにオートソートモードが設定されると、ステップ122のようにADF7に原稿Dがセットされたことを条件として、ソレノイド114が自動的に作動されてフラッパ90が区分け位置に設定される。これにより、画像が複写された用紙が自動的に区分け位置へ排出される。

【0042】ADF7に原稿Dがセットされると図4に示すエンブティセンサ9が作動される。このエンブティセンサ9は、ADF7に載置された原稿Dにより回動されるアクチュエータ9aと、このアクチュエータ9aの回動を検知する検知部9bと、を備えている。アクチュエータ9aは、図4（a）に示すようにADF7に原稿Dが載置された状態で回動され、図4（b）に示すようにADF7に原稿Dが載置されていない場合、つまり最後の原稿Dが読み取り部へ送られた時点では基準位置に戻される。検知部9bは、アクチュエータ9aの回動を検知した場合に原稿有りを検知するとともに原稿Dが複数枚であることを検知し、アクチュエータ9aが基準位置にあることを検知した場合に原稿無しを検知するとともに読み取り部へ送られた原稿Dが最後の1枚であることを検知する。

【0043】上述したオートソートモードにおいて複写動作が開始されると、まず、コントロールパネル110を介して入力された置数が1であるかどうかが判断される（ステップ125）。置数1が判断された場合、用紙センサ92により用紙の先端が検知された時点でソレノイド114によりフラッパ90が排出位置に回動されモータ116により送りローラー88が作動され用紙がノンソートピン85に排紙される（ステップ126）。

【0044】一方、置数1が判断されない場合、つまり置数が複数である場合、エンブティセンサ9による検知結果に従って原稿Dが複数枚であるかどうかが判断される（ステップ127）。原稿Dが複数枚であることが判断された場合、用紙センサ99により用紙の先端が検知された時点でモーター118により区分けローラー96が作動され用紙がソートピン86に排紙される（ステッ

プ128）。この場合、設定された置数に応じて昇降モーター120により昇降機構122が移動され、用紙が所定のソートピン86へ区分けされる。また、ステップ127において原稿Dが複数枚であることが判断されない場合、上述したステップ126と同様に用紙がノンソートピン85に排紙される。

【0045】上述した区分け動作においては、複写動作を開始すると同時に置数を判断しその後に原稿枚数を判断するよう制御したが、原稿枚数を判断した後に置数を判断するように動作を制御しても良い。

【0046】この場合、図5にステップ124として示すように、複写動作を開始すると同時に原稿枚数を判断し（ステップ135）、原稿Dが1枚であることが判断されるとステップ126と同様に用紙がノンソートピン85に排紙される。一方、原稿Dが複数枚であることが判断されると、置数が判断される（ステップ137）。そして、置数1が判断されるとステップ126に従って用紙がノンソートピン85に排紙され、置数が複数であることが判断されるとステップ128に従って用紙がソートピン86に排紙されて区分けされる。

【0047】以上の結果、置数1が判断された場合および原稿枚数が1枚であることが判断された場合にステップ126に従って用紙をノンソートピン85に排紙し、それ以外の場合、即ち置数が複数であり且つ原稿枚数が複数枚である場合にステップ128に従って用紙をソートピン86に排紙して区分けするよう動作制御すれば良いことがわかる。

【0048】従って、上述した実施例においては、オートソートモードにおいて、置数が1である場合または原稿枚数が1枚である場合にソートモードを一時的に解除し、画像が形成された用紙をノンソートピン85に排出するよう制御することができる。このため、従来のオートソートモード時における問題、即ち用紙の取り忘れまたは再コピーによる用紙無駄等の問題を無くすことができる。

【0049】尚、この発明は、上述した実施例に限定されるものではなく、この発明の範囲内で種々変形可能である。例えば、この発明は、デジタル複写機に限らず、アナログ複写機等の他の画像形成装置に適用しても良い。

【0050】

【発明の効果】以上説明したように、この発明の画像形成装置は、上記のような構成および作用を有しているので、オートソートモードが設定された場合における用紙の取り忘れ、再コピー等による用紙の無駄を防止することができる。

【図面の簡単な説明】

【図1】図1は、この発明の画像形成装置を示す概略図。

【図2】図2は、図1の画像形成装置に組込まれたソ

ターの区分け動作を制御する制御系を示すブロック図。

【図3】図3は、図1の画像形成装置に組込まれたソーターの第1の区分け動作を説明するためのフローチャート。

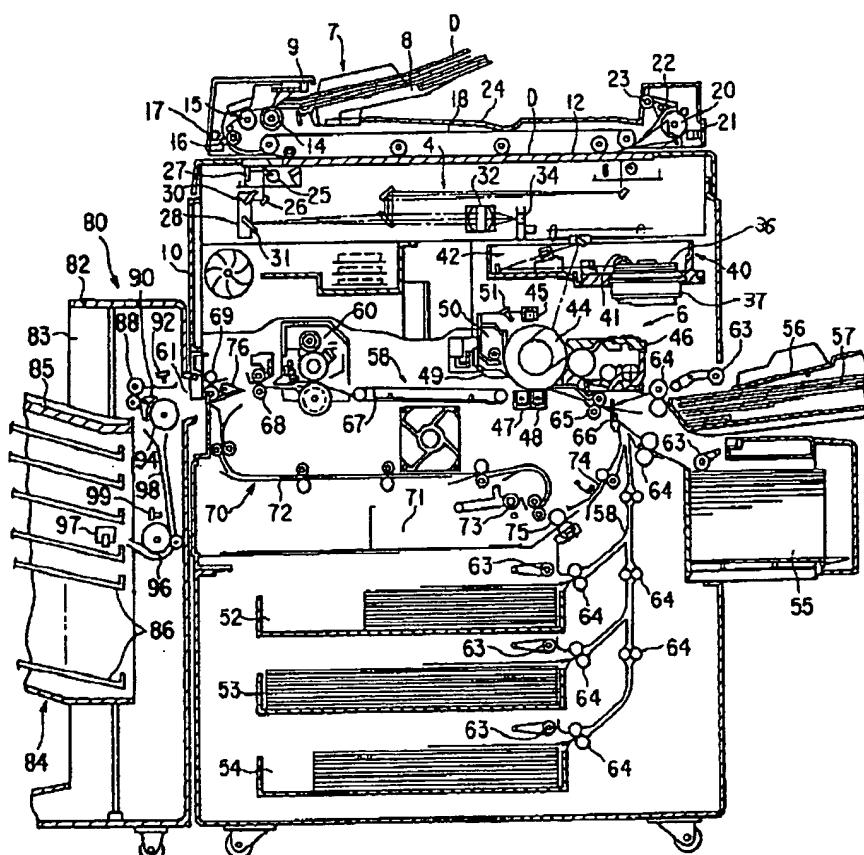
【図4】図4は、図1の画像形成装置に組込まれたADFに設けられたエンブティセンサの作動を説明するための図。

【図5】図5は、図1の画像形成装置に組込まれたソーターの第2の区分け動作を説明するためのフローチャート。

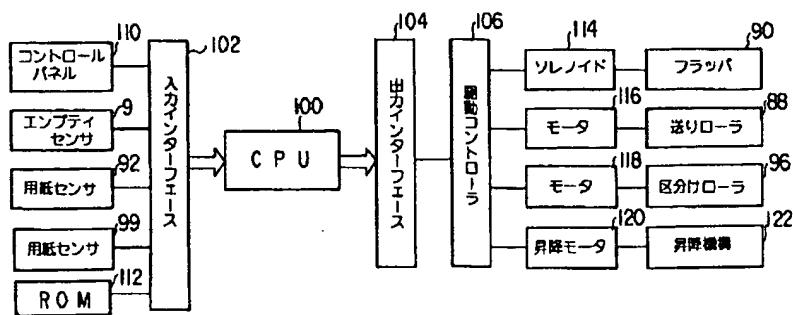
【符号の説明】

4…スキャナ、6…画像形成部、7…ADF、9…エンブティセンサ、10…装置本体、61…排出口、80…ソーター、82…管体、83…開口、84…ソートユニット、85…ノンソートビン、86…ソートビン、88…送りローラ、90…フラッパ、96…区分けローラ、98…ガイド、100…CPU、110…コントロールパネル、114…ソレノイド、116、118…モータ、120…昇降モータ、122…昇降機構。

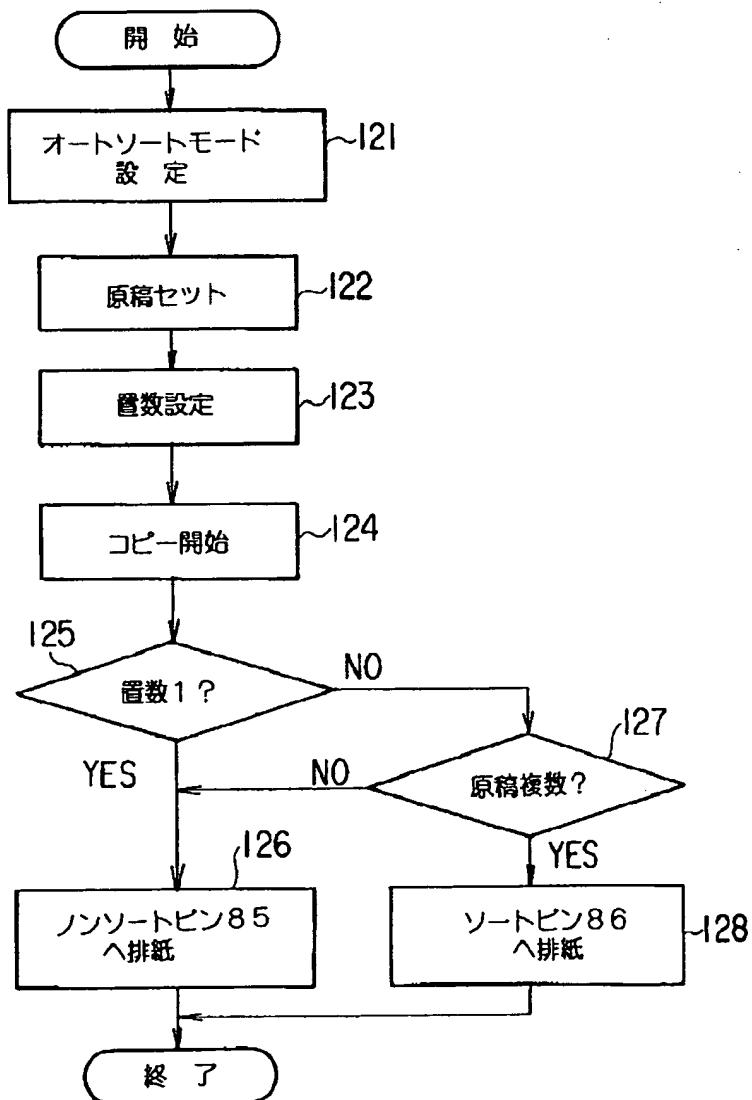
【図1】



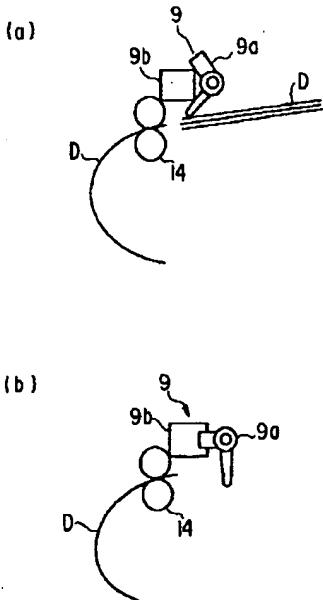
【図2】



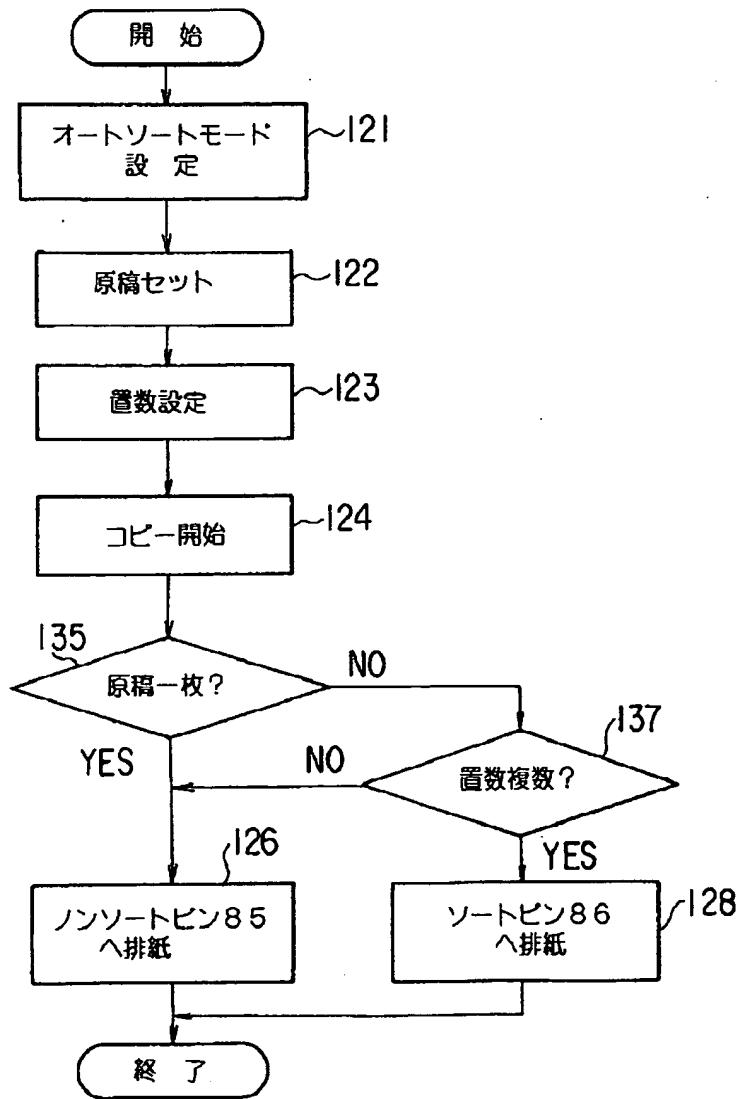
【図3】



【図4】



【図5】



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CLAIMS

[Claim(s)]

[Claim 1] An image formation means to form an image in a record medium, and a division means to classify alternatively into either a non-classifying location and a division location the record medium in which the image was formed by the above-mentioned image formation means, A mode setting means to set up the auto sort mode in which the record medium with which the above-mentioned division means was automatically operated, and the image was formed in connection with the above-mentioned image formation means operating is classified to the above-mentioned division location, A number setting means of ** to set up the number of ** of the record medium in which an image is formed by the above-mentioned image formation means, The control means which controls the above-mentioned division means to classify the record medium in which the image was formed by the above-mentioned image formation means to the above-mentioned non-classifying location when the above-mentioned auto sort mode is set up and the number of ** set up by the number setting means of ***** is 1, preparation ***** -- the image formation equipment characterized by things.

[Claim 2] A supply means to supply a manuscript to a reading station automatically, and a read means to read an image in the manuscript supplied to the above-mentioned reading station, An image formation means to form in a record medium the image read by the above-mentioned read means, A division means to classify alternatively into either a non-classifying location and a division location the record medium in which the image was formed by the above-mentioned image formation means, A mode setting means to set up the auto sort mode in which the record medium with which the above-mentioned division means was automatically operated, and the image was formed in connection with the above-mentioned image formation means operating is classified to the above-mentioned division location, When a detection means to detect the number of sheets of the manuscript supplied by the above-mentioned supply means, and the above-mentioned auto sort mode are set up, Image formation equipment characterized by having the control means which controls the above-mentioned division means to classify the record medium in which the image was formed by the above-mentioned image formation means when it was detected by the above-mentioned detection means that the number of manuscripts is one to the above-mentioned non-classifying location.

[Claim 3] A supply means to supply a manuscript to a reading station automatically, and a read means to read an image in the manuscript supplied to the above-mentioned reading station, An image formation means to form in a record medium the image read by the above-mentioned read means, A division means to classify alternatively into either a non-classifying location and a division location the record medium in which the image was formed by the above-mentioned image formation means, A mode setting means to set up the auto sort mode in which the record medium with which the above-mentioned division means was automatically operated, and the image was formed in connection with the above-mentioned image formation means operating is classified to the above-mentioned division location, A number setting means of ** to set up the number of ** of the record medium in which an image is formed by the above-mentioned image formation means, When a detection means to detect the number of sheets of the manuscript supplied by the above-mentioned supply means, and the above-mentioned

auto sort mode are set up, The control means which controls the above-mentioned division means to classify the record medium in which the image was formed by the above-mentioned image formation means to the above-mentioned non-classifying location when it is detected by the above-mentioned detection means that the number of manuscripts is one, and when the number of ** set up by the number setting means of ***** is 1, preparation ***** -- the image formation equipment characterized by things.

[Claim 4] In what classifies into either a non-classifying location and a division location alternatively the record medium with which the image was formed, and discharges it The auto sort mode in which the record medium with which the image was formed is automatically classified into the above-mentioned division location is set up. The image formation approach which discharges the record medium with which the number of ** of the record medium which forms an image was set up, the image was formed in the record medium according to the number of ***** , and the image was formed when the number of ***** was 1 in the above-mentioned non-classifying location.

[Claim 5] In what classifies into either a non-classifying location and a division location alternatively the record medium with which the image was formed, and discharges it Load with a manuscript a supply means to supply a manuscript to a reading station automatically, and the number of sheets of the manuscript supplied by the above-mentioned supply means is detected. The auto sort mode in which the record medium with which the image was formed is automatically classified to the above-mentioned division location is set up with formation of an image. An image is read in the manuscript which supplied the manuscript to the above-mentioned reading station with the above-mentioned supply means, and was supplied to the above-mentioned reading station. The image formation approach which discharges the record medium with which the read image was formed in the record medium, and the image was formed when the number of the manuscripts supplied by the above-mentioned supply means was one in a non-classifying location.

[Claim 6] In what classifies into either a non-classifying location and a division location alternatively the record medium with which the image was formed, and discharges it Load with a manuscript a supply means to supply a manuscript to a reading station automatically, and the number of sheets of the manuscript supplied by the above-mentioned supply means is detected. The auto sort mode in which the record medium with which the image was formed is automatically classified to the above-mentioned division location is set up with formation of an image. Set up the number of ** of the record medium with which an image is formed, and a manuscript is supplied to the above-mentioned reading station with the above-mentioned supply means. The image formation approach which discharges the record medium with which the image was read in the manuscript supplied to the above-mentioned reading station, the read image was formed in the record medium according to the number of ***** , and the image was formed when the number of ***** was 1, and when the number of the manuscripts supplied by the above-mentioned supply means was one in a non-classifying location.

[Translation done.]

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DETAILED DESCRIPTION

[Detailed Description of the Invention]**[0001]**

[Industrial Application] This invention relates to image formation equipment equipped with the sorter which classifies the form with which the image was formed.

[0002]

[Description of the Prior Art] The copying machine equipped with the automatic manuscript feed gear (ADF is called hereafter) which supplies a manuscript to a predetermined reading station automatically, and the sorter which classifies automatically the form with which the image was formed and is accumulated as image formation equipment is known. In such a copying machine, when sort mode is set up, one manuscript set to ADF is supplied at a time to an image reading station in order, and an image is read by the image read station. And according to the read image, the form with which the image was formed in the form as a record medium of the image formation section, and the image was formed is classified and accumulated on two or more division locations (sort bottle).

[0003] In such a copying machine, the auto sort mode in which all the forms with which the image was formed the condition [the manuscript having been laid in ADF] are automatically classified to two or more sort bottles can be set up.

[0004]

[Problem(s) to be Solved by the Invention] However, in the conventional copying machine, when auto sort mode is set up, even if it is the case where the case where the number of the manuscripts laid in ADF is one, and the number of ** are 1, all the forms with which the image was formed are classified and delivered to two or more sort bottles. Usually, when it is not necessary to classify the discharged form when the case where the number of manuscripts is one, and the number of ** are 1, and the form has been discharged by the sort bottle, a user has the problem which a form mistakes with what is delivered to a non-classifying location (non sort bottle), and forgets to take the copied form. Or it mistakes with that to which the form is not delivered, and there is a problem which carries out a re-copy and produces the futility of a form.

[0005] This invention was made in view of the above point, a form when auto sort mode is set up forgets to take that purpose, and it is in offering the image formation equipment which can prevent the futility of the form by a re-copy etc.

[0006]

[Means for Solving the Problem] In order to attain the above-mentioned purpose, the image formation equipment concerning this invention An image formation means to form an image in a record medium, and a division means to classify alternatively into either a non-classifying location and a division location the record medium in which the image was formed by the above-mentioned image formation means, A mode setting means to set up the auto sort mode in which the record medium with which the above-mentioned division means was automatically operated, and the image was formed in connection with the above-mentioned image formation means operating is classified to the above-mentioned division location, A number setting means of ** to set up the number of ** of the record medium in

which an image is formed by the above-mentioned image formation means, When the above-mentioned auto sort mode is set up, and the number of ** set up by the number setting means of ***** is 1, it has the control means which controls the above-mentioned division means to classify the record medium in which the image was formed by the above-mentioned image formation means to the above-mentioned non-classifying location.

[0007] Moreover, a supply means by which the image formation equipment concerning this invention supplies a manuscript to a reading station automatically, A read means to read an image in the manuscript supplied to the above-mentioned reading station, and an image formation means to form in a record medium the image read by the above-mentioned read means, A division means to classify alternatively into either a non-classifying location and a division location the record medium in which the image was formed by the above-mentioned image formation means, A mode setting means to set up the auto sort mode in which the record medium with which the above-mentioned division means was automatically operated, and the image was formed in connection with the above-mentioned image formation means operating is classified to the above-mentioned division location, When a detection means to detect the number of sheets of the manuscript supplied by the above-mentioned supply means, and the above-mentioned auto sort mode are set up, When it is detected by the above-mentioned detection means that the number of manuscripts is one, it has the control means which controls the above-mentioned division means to classify the record medium in which the image was formed by the above-mentioned image formation means to the above-mentioned non-classifying location.

[0008] Moreover, a supply means by which the image formation equipment concerning this invention supplies a manuscript to a reading station automatically, A read means to read an image in the manuscript supplied to the above-mentioned reading station, and an image formation means to form in a record medium the image read by the above-mentioned read means, A division means to classify alternatively into either a non-classifying location and a division location the record medium in which the image was formed by the above-mentioned image formation means, A mode setting means to set up the auto sort mode in which the record medium with which the above-mentioned division means was automatically operated, and the image was formed in connection with the above-mentioned image formation means operating is classified to the above-mentioned division location, A number setting means of ** to set up the number of ** of the record medium in which an image is formed by the above-mentioned image formation means, When a detection means to detect the number of sheets of the manuscript supplied by the above-mentioned supply means, and the above-mentioned auto sort mode are set up, The control means which controls the above-mentioned division means to classify the record medium in which the image was formed by the above-mentioned image formation means to the above-mentioned non-classifying location when it is detected by the above-mentioned detection means that the number of manuscripts is one, and when the number of ** set up by the number setting means of ***** is 1, Preparation *****.

[0009] Moreover, according to this invention, it sets to what classifies into either a non-classifying location and a division location alternatively the record medium with which the image was formed, and discharges it. The auto sort mode in which the record medium with which the image was formed is automatically classified into the above-mentioned division location is set up. The number of ** of the record medium which forms an image is set up, an image is formed in a record medium according to the number of *****, and when the number of ***** is 1, the record medium with which the image was formed is discharged in the above-mentioned non-classifying location.

[0010] Moreover, according to this invention, it sets to what classifies into either a non-classifying location and a division location alternatively the record medium with which the image was formed, and discharges it. Load with a manuscript a supply means to supply a manuscript to a reading station automatically, and the number of sheets of the manuscript supplied by the above-mentioned supply means is detected. The auto sort mode in which the record medium with which the image was formed is automatically classified to the above-mentioned division location is set up with formation of an image. An image is read in the manuscript which supplied the manuscript to the above-mentioned reading station with the above-mentioned supply means, and was supplied to the above-mentioned reading

station, the read image is formed in a record medium, and when the number of the manuscripts supplied by the above-mentioned supply means is one, the record medium with which the image was formed is discharged in a non-classifying location.

[0011] Moreover, according to this invention, it sets to what classifies into either a non-classifying location and a division location alternatively the record medium with which the image was formed, and discharges it. Load with a manuscript a supply means to supply a manuscript to a reading station automatically, and the number of sheets of the manuscript supplied by the above-mentioned supply means is detected. The auto sort mode in which the record medium with which the image was formed is automatically classified to the above-mentioned division location is set up with formation of an image. Set up the number of ** of the record medium with which an image is formed, and a manuscript is supplied to the above-mentioned reading station with the above-mentioned supply means. An image is read in the manuscript supplied to the above-mentioned reading station, the read image is formed in a record medium according to the number of *****, and when the number of ***** is 1, and when the number of the manuscripts supplied by the above-mentioned supply means is one, the record medium with which the image was formed is discharged in a non-classifying location.

[0012]

[Function] According to the image formation equipment concerning this invention, the auto sort mode in which the record medium in which the image was formed by the image formation means is automatically classified to a division location with a division means is set up. Moreover, the number of ** of the record medium in which the image was formed by the number setting means of ** is set up. And a condition [the above-mentioned auto sort mode being set up], when the number of ***** is 1, a division means is controlled by the control means to discharge the record medium with which the image was formed to a non-classifying location without a partition opium poppy.

[0013] Moreover, it detects with a detection means that the manuscript supplied by the supply means is one sheet or two or more sheets, and a condition [the above-mentioned auto sort mode being set up], when there is a number of sheets of a manuscript, a division means is controlled by the control means to discharge the record medium with which the image was formed to a non-classifying location without a partition opium poppy. A failure of a form when auto sort mode is set up to take can be prevented by this, and the futility of the form by a re-copy etc. can be lost.

[0014]

[Example] The image formation equipment concerning this invention is explained to a detail about the example applied to the digital copier, referring to a drawing below. As shown in drawing 1, a digital copier is equipped with the body 10 of equipment, and the scanner 4 which functions as a read means to mention later, and the image formation section 6 which functions as an image formation means are formed in this body 10 of equipment.

[0015] The manuscript installation base 12 which consists of transparent glass with which the control panel which acts as the mode setting means of this invention and a number setting means of **, and which is mentioned later, and the reading object D, i.e., a manuscript, are laid is established in the top face of the body 10 of equipment. Moreover, the automatic manuscript feed gear 7 (ADF7 is called hereafter) as a supply means to send a manuscript automatically on the manuscript installation base 12 is arranged in the top face of the body 10 of equipment. This ADF7 is arranged possible [closing motion] to the manuscript installation base 12, and functions also as an original cover which sticks the manuscript D laid in the manuscript installation base on the manuscript installation base 12.

[0016] ADF7 While detecting the existence of the manuscript tray 8 on which Manuscript D is set, and a manuscript Any of one sheet or two or more sheets the laid manuscripts are as a detection means to detect A manuscript from the ** empty sensor 9 and the manuscript tray 8 The pickup roller 14 which it takes out one sheet at a time, and the taken-out manuscript the ally NINGU roller pair which carries out ready grade of the tip of the feed roller 15 to convey and a manuscript -- 16, the ally NINGU sensor 17 which detects the tip of a manuscript, and the manuscript installation base 12 -- almost -- the whole -- a wrap -- it has the conveyance belt 18 arranged like. and the manuscript of two or more sheets set upward to the manuscript tray 8 is taken out sequentially from the page of the bottom, i.e., the last page, --

having -- an ally NINGU roller pair -- after ready grade is carried out by 16, it is conveyed with the conveyance belt 18 to the predetermined reading station of the manuscript installation base 12.

[0017] ADF7 -- setting -- the conveyance belt 18 -- inserting -- an ally NINGU roller pair -- the reversal roller 20, the noninverting sensor 21, the flapper 22, and the delivery roller 23 are arranged in the edge of 16 and the opposite side. The manuscript D in which image information was read with the scanner 4 mentioned later is sent out from the manuscript installation base 12 with the conveyance belt 18, and is discharged on the manuscript delivery unit 24 of ADF7 top face through the reversal roller 20, a flapper 21, and the delivery roller 22. When reading the rear face of Manuscript D, the manuscript D conveyed with the conveyance belt 18 by switching a flapper 22 is again sent to the predetermined location on the manuscript installation base 12 with the conveyance belt 18, after it is reversed with the reversal roller 20.

[0018] The scanner 4 arranged in the body 10 of equipment has the 1st mirror 26 which deflects the light source 25 of the fluorescent lamp which illuminates the manuscript D laid in the manuscript installation base 12, and the reflected light from Manuscript D in the predetermined direction, and these light source 25 and 1st mirror 26 are attached in the 1st carriage 27 arranged down the manuscript installation base 12. The 1st carriage 27 is arranged movable in parallel with the manuscript installation base 12, and both-way migration of the lower part of the manuscript installation base 12 is carried out with a drive motor through the synchronous belt which is not illustrated.

[0019] Moreover, the manuscript installation base 12 and the 2nd carriage 28 movable in parallel are arranged in the lower part of the manuscript installation base 12. The 2nd and 3rd mirrors 30 and 31 of each other which deflect in order the reflected light from the manuscript D deflected by the 1st mirror 26 on the 2nd carriage 28 are attached in the right angle. The 2nd carriage 28 is moved in parallel along the manuscript installation base 12 to the 1st carriage by the synchronous belt which drives the 1st carriage 27 at the rate of one half while following to the 1st carriage 27.

[0020] Moreover, down the manuscript installation base 12, the image formation lens 32 which converges the reflected light from the 3rd mirror 31 on the 2nd carriage 28, and the CCD sensor 34 which receives and carries out photo electric conversion of the reflected light which converged with the image formation lens are arranged. The image formation lens 32 is arranged movable through a drive in a field including the optical axis of the light deflected by the 3rd mirror 31, and carries out image formation for the scale factor of a request of the reflected light because self moves. And the CCD sensor 34 carries out photo electric conversion of the reflected light which carried out incidence, and outputs the electrical signal corresponding to the read manuscript D.

[0021] On the other hand, the image formation section 6 is equipped with the laser aligner 40. The laser aligner 40 is equipped with the semiconductor laser 41 as the light source, the polygon mirror 36 which deflects continuously the laser beam by which outgoing radiation was carried out from semiconductor laser 41, the polygon motor 37 which carries out the rotation drive of the polygon mirror at a predetermined rotational frequency, and the optical system 42 led to the photo conductor drum which deflects and mentions the laser beam from a polygon mirror later.

[0022] According to the image information of the manuscript D read with the scanner 4, or facsimile transceiver document information, on-off control of the semiconductor laser 41 is carried out, this laser beam is turned to a photo conductor drum through the polygon mirror 36 and optical system 42, and it forms an electrostatic latent image on a drum peripheral surface by carrying out the exposure scan of the photo conductor drum peripheral surface.

[0023] Moreover, the image formation section 6 has the photo conductor drum 44 in which the rotation as image support of the body 10 of equipment mostly arranged in the center is free, a photo conductor drum peripheral surface is exposed by the laser beam from the laser aligner 40, and a desired electrostatic latent image is formed. the record medium fed to the perimeter of the photo conductor drum 44 from the electrification charger 45 which electrifies a drum peripheral surface in a predetermined charge, the development counter 46 which supplies the toner as a developer to the electrostatic latent image formed on the photo conductor drum peripheral surface, and is developed by desired image concentration, and the form cassette mentioned later -- that is, It has the exfoliation charger 47 for

making copy paper P separate from a photo conductor drum in one. the cleaning equipment 50 which cleans the exfoliation pawl 49 which exfoliates a copy paper, and the toner which remained to the photo conductor drum peripheral surface from the imprint charger 48 which makes Form P imprint the toner image formed in the photo conductor drum 44, and a photo conductor drum peripheral surface -- and The electric discharge machine 51 which a photo conductor drum peripheral surface discharges is arranged in order.

[0024] the upper case cassette 52 in which the body of equipment to a cash drawer is possible respectively in the lower part within the body 10 of equipment, and the middle -- a cassette 53 and the lower-berth cassette 54 of each other are arranged by the laminating condition, and it is loaded with the copy paper from which size differs into each cassette. The mass feeder 55 is formed in the side of these cassettes, and about 3000 sheets of copy papers of size with high operating frequency, for example, the copy paper of A4 size, are contained by this mass feeder 55. Moreover, it is equipped with the sheet paper cassette 57 which served as the detachable tray 56 above the mass feeder 55 free [desorption].

[0025] In the body 10 of equipment, the conveyance way 58 which extends through the imprint section located between the photo conductor drum 44 and the imprint charger 48 from each cassette and the mass feeder 55 is formed, and the anchorage device 60 is formed in the termination of the conveyance way 58. An exhaust port 61 is formed in the side attachment wall of the body 10 of equipment which countered the anchorage device 60, and the sorter 80 which classifies the discharged copy paper and which is mentioned later is connected with the exhaust port 61.

[0026] the upper case cassette 52 and the middle -- near the mass feeder 55 near a cassette 53, the lower-berth cassette 54, and the sheet paper cassette 57, the pickup roller 63 which picks out one sheet of form at a time from a cassette or a mass feeder is formed, respectively. moreover, the feed roller pair of a large number which convey copy paper P taken out with the pickup roller 63 through the conveyance way 58 in the conveyance way 58 -- 64 is prepared.

[0027] On the conveyance way 58, resist roller pair 65 is prepared in the upstream of the photo conductor drum 44. Resist roller pair 65 adjusts the tip of the toner image on the photo conductor drum 44, and the tip of copy paper P, and feeds copy paper P to the imprint section at the same rate as the passing speed of a photo conductor drum peripheral surface while it amends the inclination of taken-out copy paper P. The sensor 66 before ally NINGU which detects attainment of copy paper P is formed in the side, resist roller pair this side 64 of 65, i.e., a feed roller.

[0028] copy paper P taken out one sheet at a time from each cassette or the mass feeder 55 with the pickup roller 63 -- a feed roller pair -- 64 -- a resist roller pair -- it is sent to 65. and copy paper P -- a resist roller pair -- after ready grade of the tip is carried out by 65, it is sent to the imprint section. In the imprint section, the developer image formed on the photo conductor drum 44, i.e., a toner image, is imprinted on Form P by the imprint charger 48. Copy paper P by which the toner image was imprinted exfoliates from photo conductor drum 44 peripheral surface according to an operation of the exfoliation charger 47 and the exfoliation pawl 49, and is conveyed by the anchorage device 60 through the conveyance belt 67 which constitutes a part of conveyance way 58. and the anchorage device 60 -- a developer image -- copy paper P -- after [melting fixing ***] and copy paper P -- a feed roller pair -- it is led to a sorter 80 by 68 and delivery roller pair 69 through an exhaust port 61.

[0029] copy paper P which passed the anchorage device 60 down the conveyance way 58 -- being reversed -- again -- a resist roller pair -- the automatic double-sided equipment 70 sent to 65 is formed. Automatic double-sided equipment 70 temporarily accumulate copy paper P temporarily The accumulation section 71, The reversal way 72 which branches from the conveyance way 58, reverses copy paper P which passed the anchorage device 60, and is led to the accumulation section 71 temporarily, the pickup roller 73 which takes out at a time one copy paper P accumulated on the accumulation section temporarily, and the taken-out form -- the conveyance way 74 -- letting it pass -- a resist roller pair -- it has the feed roller 75 fed to 65. Moreover, the distribution gate 76 which distributes copy paper P to an exhaust port 61 or the reversal way 72 alternatively is established in the tee of the conveyance way 58 and the reversal way 72.

[0030] the pickup roller 73 when a double-sided copy was performed, after copy paper P which passed

the anchorage device 60 was led to the reversal way 72 by the distribution gate 76 and the accumulation section 71 was temporarily piled up in the condition of having been reversed, and feed roller pair 75 -- the conveyance way 74 -- letting it pass -- a resist roller pair -- it is sent to 65. and copy paper P -- a resist roller pair -- after ready grade is carried out by 65, it is again sent to the imprint section and a toner image is imprinted by the rear face of copy paper P. Then, copy paper P is led to a sorter 80 through the conveyance way 58, an anchorage device 60, the delivery roller 69, and an exhaust port 61.

[0031] Hereafter, a sorter 80 is explained to a detail. The sorter 80 has the case 82 arranged together with the body 10 of equipment while connecting with the exhaust port 61. The side face of a case 82 in which it was located in the opposite side of the body 10 of equipment has opening 83. Moreover, in the case 82, the sort unit 84 which can go up and down is arranged along the perpendicular direction. The sort unit 84 has many bottles for accumulating the copy paper discharged from the body 10 of equipment, and these bottles are arranged by the laminating condition along the perpendicular direction.

[0032] These bottles contain the non sort bottle 85 arranged in the topmost non-classifying location, and the sort bottle 86 of a large number which the laminating was caudad carried out with the predetermined clearance between the non sort bottles 85, and have been arranged in the division location. And the non sort bottle 85 and the sort bottle 86 have extended from opening 83 to the way outside a case 82.

[0033] moreover, in a case 82, it counters with an exhaust port 61 and prepares -- having -- a delivery roller pair -- the delivery roller 88 of the pair which discharges the copy paper sent by 69 on the non sort bottle 86, an exhaust port 61, and a delivery roller pair -- the guide idler 94 adjoined and prepared in the flapper 90 and flapper 90 which were located between 88, and the form sensor 92 which is located between an exhaust port 61 and a flapper 90, and detects attainment of a copy paper are formed.

[0034] the copy paper to which the flapper 90 has been sent from the delivery roller 69 -- a delivery roller pair -- between the discharge location led to 88, the division location which leads the copy paper sent from the delivery roller 69 to the sort bottle 86 side, and **s is prepared enabling free rotation, and between both locations is switched by the solenoid mentioned later.

[0035] Under the guide idler 94, the division roller 96 is arranged in a case 82, and the form sensor 99 and ** which detect the guide 98 to which the copy paper caudad turned by the flapper 90 is led to the division roller 96, and attainment of a copy paper are prepared between the guide idler 94 and the division roller 96.

[0036] According to the sorter 80 of the above-mentioned configuration, when the flapper 90 is switched to the division location, copy paper P discharged from the exhaust port 61 of the body 10 of equipment is sent to the division roller 96 with a flapper 90, a guide idler 94, and a guide 98. And copy paper P is discharged on the sort tray 86 which counters with these division rollers and is located with the division roller 96. Therefore, copy paper P can be discharged and classified one by one on the division roller 96 and the sort tray 86 which counters by carrying out a rise-and-fall drive by the elevator style which mentions the sort unit 84 later.

[0037] Next, the control system which controls division actuation of the form in which the image was formed by the digital copier constituted as mentioned above is explained. The control system is equipped with CPU100 as a control means as shown in drawing 2. The control panel 110 as a setting means, the empty sensor 9 formed in ADF7, the form sensor 92 formed in the upstream of a flapper 90, the form sensor 99 formed in the upstream of the division roller 96, and ROM112 in which the control data was stored are connected to CPU100 through the input interface 102.

[0038] Moreover, the drive controller 106 is connected to CPU100 through the output interface 104. The solenoid 114 switched between the discharge locations and division locations which mentioned the flapper 90 above, the motor 116 which drives the delivery roller 88, the motor 118 which drives the division roller 96, and the rise-and-fall motor 120 which operates the elevator style 122 and goes up and down the sort unit 84 are connected to the drive controller 106.

[0039] In addition, the delivery roller 88, the flapper 90, the division roller 96, and the sorter 80 containing the elevator style 122 constitute the division means of this invention. Next, division actuation (1st division actuation) of a form when auto sort mode is set up in the digital copier of this invention constituted as mentioned above is explained using drawing 3. In addition, auto sort mode means that a

sorter 80 chooses sort mode (division mode) automatically a condition [the manuscript having been laid in ADF7]. Therefore, when auto sort mode is set up, the form with which the image was formed is delivered to a sort bottle according to the number of **. Moreover, the number of ** said here points out the number of groups (number of sheets) of the form which copies the image of 1 set (or one sheet) of manuscripts, and is obtained. For example, when two or more manuscripts are laid in ADF7 and three ** are set up in a control panel 110, the image of each manuscript is copied by a unit of 3 times, respectively, and this copied form is put together, respectively and is delivered to 1 thru/or sort [the 3rd step of] bottle.

[0040] First, the auto sort mode mentioned above through the control panel 110 as initial setting of a digital copier is set up (step 121). And Manuscript D is set to ADF (step 122), the number of ** is set up through a control panel 110 (step 123), and copy actuation is started according to this number of ** (step 124).

[0041] If auto sort mode is set up as shown in step 121, a solenoid 114 will operate automatically a condition [Manuscript D having been set to ADF7 like step 122], and a flapper 90 will be set as a division location. Thereby, the form with which the image was copied is discharged automatically in a division location.

[0042] If Manuscript D is set to ADF7, the empty sensor 9 shown in drawing 4 will operate. This empty sensor 9 is equipped with actuator 9a which rotates with the manuscript D laid in ADF7, and detection section 9b which detects rotation of this actuator 9a. As shown in drawing 4 (a), actuator 9a rotates, where Manuscript D is laid in ADF7, and as shown in drawing 4 (b), when Manuscript D is not laid in ADF7 that is, when the last manuscript D is sent to a read station, it is returned to a criteria location. Detection section 9b detects that the number of Manuscripts D is [two or more] while detecting those with a manuscript, when rotation of actuator 9a is detected, and when it is detected that actuator 9a is in a criteria location, while detecting those without a manuscript, it detects that the manuscript D sent to the read station is the last one sheet.

[0043] If copy actuation is started in the auto sort mode mentioned above, it will be judged first whether the number of ** inputted through the control panel 110 is 1 (step 125). When one ** is judged, and the tip of a form is detected by the form sensor 92, a flapper 90 rotates in a discharge location by the solenoid 114, the delivery roller 88 operates by the motor 116, and a form is delivered to the non sort bottle 85 (step 126).

[0044] On the other hand, when one ** is not judged (i.e., when the number of ** is plurality), according to the detection result by the empty sensor 9, it is judged whether the number of Manuscripts D is [two or more] (step 127). When it is judged that the number of Manuscripts D is [two or more], and the tip of a form is detected by the form sensor 99, the division roller 96 operates by the motor 118, and a form is delivered to the sort bottle 86 (step 128). In this case, the elevator style 122 is moved by the rise-and-fall motor 120 according to the set-up number of **, and a form is classified to the predetermined sort bottle 86. Moreover, when it is not judged in step 127 that the number of Manuscripts D is [two or more], a form is delivered to the non sort bottle 85 like step 126 mentioned above.

[0045] In the division actuation mentioned above, while starting copy actuation, it controlled to judge the number of ** and to judge manuscript number of sheets after that, but after judging manuscript number of sheets, actuation may be controlled to judge the number of **.

[0046] In this case, if manuscript number of sheets is judged (step 135) and it is judged that the number of Manuscripts D is one at the same time it starts copy actuation as shown in drawing 5 as step 124, a form will be delivered to the non sort bottle 85 like step 126. On the other hand, decision of that the number of Manuscripts D is [two or more] judges the number of ** (step 137). And if one ** is judged, according to step 126, a form will be delivered to the non sort bottle 85, and if it is judged that the number of ** is plurality, a form will be delivered [paper] to it and classified into the sort bottle 86 according to step 128.

[0047] It turns out that what is necessary is to deliver a form to the non sort bottle 85 the above result according to step 126 when one ** is judged, and when it is judged that there is a manuscript number of

sheets, and just to carry out motion control so that a form may be delivered to it paper and classified into the sort bottle 86 according to step 128, when other (i.e., when the number of ** is plurality and there is two or more manuscript number of sheets).

[0048] Therefore, in the example mentioned above, in auto sort mode, when the number of ** is 1, or when there is a manuscript number of sheets, sort mode can be canceled temporarily, and it can control to discharge the form with which the image was formed into the non sort bottle 85. For this reason, the problem at the time of the conventional auto sort mode, i.e., a form, forgets to take, or problems, such as form futility by the re-copy, can be abolished.

[0049] In addition, this invention is not limited to the example mentioned above, and is variously deformable within the limits of this invention. For example, this invention may be applied to other image formation equipments, such as not only a digital copier but an analog copying machine.

[0050]

[Effect of the Invention] As explained above, since the image formation equipment of this invention has above configurations and operations, a form when auto sort mode is set up forgets to take it, and it can prevent the futility of the form by a re-copy etc.

[Translation done.]

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TECHNICAL FIELD

[Industrial Application] This invention relates to image formation equipment equipped with the sorter which classifies the form with which the image was formed.

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PRIOR ART

[Description of the Prior Art] The copying machine equipped with the automatic manuscript feed gear (ADF is called hereafter) which supplies a manuscript to a predetermined reading station automatically, and the sorter which classifies automatically the form with which the image was formed and is accumulated as image formation equipment is known. In such a copying machine, when sort mode is set up, one manuscript set to ADF is supplied at a time to an image reading station in order, and an image is read by the image read station. And according to the read image, the form with which the image was formed in the form as a record medium of the image formation section, and the image was formed is classified and accumulated on two or more division locations (sort bottle).

[0003] In such a copying machine, the auto sort mode in which all the forms with which the image was formed the condition [the manuscript having been laid in ADF] are automatically classified to two or more sort bottles can be set up.

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EFFECT OF THE INVENTION

[Effect of the Invention] As explained above, since the image formation equipment of this invention has above configurations and operations, a form when auto sort mode is set up forgets to take it, and it can prevent the futility of the form by a re-copy etc.

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TECHNICAL PROBLEM

[Problem(s) to be Solved by the Invention] However, in the conventional copying machine, when auto sort mode is set up, even if it is the case where the case where the number of the manuscripts laid in ADF is one, and the number of ** are 1, all the forms with which the image was formed are classified and delivered to two or more sort bottles. Usually, when it is not necessary to classify the discharged form when the case where the number of manuscripts is one, and the number of ** are 1, and the form has been discharged by the sort bottle, a user has the problem which a form mistakes with what is delivered to a non-classifying location (non sort bottle), and forgets to take the copied form. Or it mistakes with that to which the form is not delivered, and there is a problem which carries out a re-copy and produces the futility of a form.

[0005] This invention was made in view of the above point, a form when auto sort mode is set up forgets to take that purpose, and it is in offering the image formation equipment which can prevent the futility of the form by a re-copy etc.

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MEANS

[Means for Solving the Problem] In order to attain the above-mentioned purpose, the image formation equipment concerning this invention An image formation means to form an image in a record medium, and a division means to classify alternatively into either a non-classifying location and a division location the record medium in which the image was formed by the above-mentioned image formation means, A mode setting means to set up the auto sort mode in which the record medium with which the above-mentioned division means was automatically operated, and the image was formed in connection with the above-mentioned image formation means operating is classified to the above-mentioned division location, A number setting means of ** to set up the number of ** of the record medium in which an image is formed by the above-mentioned image formation means, When the above-mentioned auto sort mode is set up, and the number of ** set up by the number setting means of ***** is 1, it has the control means which controls the above-mentioned division means to classify the record medium in which the image was formed by the above-mentioned image formation means to the above-mentioned non-classifying location.

[0007] Moreover, a supply means by which the image formation equipment concerning this invention supplies a manuscript to a reading station automatically, A read means to read an image in the manuscript supplied to the above-mentioned reading station, and an image formation means to form in a record medium the image read by the above-mentioned read means, A division means to classify alternatively into either a non-classifying location and a division location the record medium in which the image was formed by the above-mentioned image formation means, A mode setting means to set up the auto sort mode in which the record medium with which the above-mentioned division means was automatically operated, and the image was formed in connection with the above-mentioned image formation means operating is classified to the above-mentioned division location, When a detection means to detect the number of sheets of the manuscript supplied by the above-mentioned supply means, and the above-mentioned auto sort mode are set up, When it is detected by the above-mentioned detection means that the number of manuscripts is one, it has the control means which controls the above-mentioned division means to classify the record medium in which the image was formed by the above-mentioned image formation means to the above-mentioned non-classifying location.

[0008] Moreover, a supply means by which the image formation equipment concerning this invention supplies a manuscript to a reading station automatically, A read means to read an image in the manuscript supplied to the above-mentioned reading station, and an image formation means to form in a record medium the image read by the above-mentioned read means, A division means to classify alternatively into either a non-classifying location and a division location the record medium in which the image was formed by the above-mentioned image formation means, A mode setting means to set up the auto sort mode in which the record medium with which the above-mentioned division means was automatically operated, and the image was formed in connection with the above-mentioned image formation means operating is classified to the above-mentioned division location, A number setting means of ** to set up the number of ** of the record medium in which an image is formed by the above-mentioned image formation means, When a detection means to detect the number of sheets of the

manuscript supplied by the above-mentioned supply means, and the above-mentioned auto sort mode are set up, The control means which controls the above-mentioned division means to classify the record medium in which the image was formed by the above-mentioned image formation means to the above-mentioned non-classifying location when it is detected by the above-mentioned detection means that the number of manuscripts is one, and when the number of ** set up by the number setting means of ***** is 1, Preparation *****.

[0009] Moreover, according to this invention, it sets to what classifies into either a non-classifying location and a division location alternatively the record medium with which the image was formed, and discharges it. The auto sort mode in which the record medium with which the image was formed is automatically classified into the above-mentioned division location is set up. The number of ** of the record medium which forms an image is set up, an image is formed in a record medium according to the number of ******, and when the number of ***** is 1, the record medium with which the image was formed is discharged in the above-mentioned non-classifying location.

[0010] Moreover, according to this invention, it sets to what classifies into either a non-classifying location and a division location alternatively the record medium with which the image was formed, and discharges it. Load with a manuscript a supply means to supply a manuscript to a reading station automatically, and the number of sheets of the manuscript supplied by the above-mentioned supply means is detected. The auto sort mode in which the record medium with which the image was formed is automatically classified to the above-mentioned division location is set up with formation of an image. An image is read in the manuscript which supplied the manuscript to the above-mentioned reading station with the above-mentioned supply means, and was supplied to the above-mentioned reading station, the read image is formed in a record medium, and when the number of the manuscripts supplied by the above-mentioned supply means is one, the record medium with which the image was formed is discharged in a non-classifying location.

[0011] Moreover, according to this invention, it sets to what classifies into either a non-classifying location and a division location alternatively the record medium with which the image was formed, and discharges it. Load with a manuscript a supply means to supply a manuscript to a reading station automatically, and the number of sheets of the manuscript supplied by the above-mentioned supply means is detected. The auto sort mode in which the record medium with which the image was formed is automatically classified to the above-mentioned division location is set up with formation of an image. Set up the number of ** of the record medium with which an image is formed, and a manuscript is supplied to the above-mentioned reading station with the above-mentioned supply means. An image is read in the manuscript supplied to the above-mentioned reading station, the read image is formed in a record medium according to the number of ******, and when the number of ***** is 1, and when the number of the manuscripts supplied by the above-mentioned supply means is one, the record medium with which the image was formed is discharged in a non-classifying location.

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OPERATION

[Function] According to the image formation equipment concerning this invention, the auto sort mode in which the record medium in which the image was formed by the image formation means is automatically classified to a division location with a division means is set up. Moreover, the number of ** of the record medium in which the image was formed by the number setting means of ** is set up. And a condition [the above-mentioned auto sort mode being set up], when the number of ***** is 1, a division means is controlled by the control means to discharge the record medium with which the image was formed to a non-classifying location without a partition opium poppy.

[0013] Moreover, it detects with a detection means that the manuscript supplied by the supply means is one sheet or two or more sheets, and a condition [the above-mentioned auto sort mode being set up], when there is a number of sheets of a manuscript, a division means is controlled by the control means to discharge the record medium with which the image was formed to a non-classifying location without a partition opium poppy. A failure of a form when auto sort mode is set up to take can be prevented by this, and the futility of the form by a re-copy etc. can be lost.

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EXAMPLE

[Example] The image formation equipment concerning this invention is explained to a detail about the example applied to the digital copier, referring to a drawing below. As shown in drawing 1, a digital copier is equipped with the body 10 of equipment, and the scanner 4 which functions as a read means to mention later, and the image formation section 6 which functions as an image formation means are formed in this body 10 of equipment.

[0015] The manuscript installation base 12 which consists of transparent glass with which the control panel which acts as the mode setting means of this invention and a number setting means of **, and which is mentioned later, and the reading object D, i.e., a manuscript, are laid is established in the top face of the body 10 of equipment. Moreover, the automatic manuscript feed gear 7 (ADF7 is called hereafter) as a supply means to send a manuscript automatically on the manuscript installation base 12 is arranged in the top face of the body 10 of equipment. This ADF7 is arranged possible [closing motion] to the manuscript installation base 12, and functions also as an original cover which sticks the manuscript D laid in the manuscript installation base on the manuscript installation base 12.

[0016] ADF7 While detecting the existence of the manuscript tray 8 on which Manuscript D is set, and a manuscript Any of one sheet or two or more sheets the laid manuscripts are as a detection means to detect A manuscript from the ** empty sensor 9 and the manuscript tray 8 The pickup roller 14 which it takes out one sheet at a time, and the taken-out manuscript the ally NINGU roller pair which carries out ready grade of the tip of the feed roller 15 to convey and a manuscript -- 16, the ally NINGU sensor 17 which detects the tip of a manuscript, and the manuscript installation base 12 -- almost -- the whole -- a wrap -- it has the conveyance belt 18 arranged like. and the manuscript of two or more sheets set upward to the manuscript tray 8 is taken out sequentially from the page of the bottom, i.e., the last page, -- having -- an ally NINGU roller pair -- after ready grade is carried out by 16, it is conveyed with the conveyance belt 18 to the predetermined reading station of the manuscript installation base 12.

[0017] ADF7 -- setting -- the conveyance belt 18 -- inserting -- an ally NINGU roller pair -- the reversal roller 20, the noninverting sensor 21, the flapper 22, and the delivery roller 23 are arranged in the edge of 16 and the opposite side. The manuscript D in which image information was read with the scanner 4 mentioned later is sent out from the manuscript installation base 12 with the conveyance belt 18, and is discharged on the manuscript delivery unit 24 of ADF7 top face through the reversal roller 20, a flapper 21, and the delivery roller 22. When reading the rear face of Manuscript D, the manuscript D conveyed with the conveyance belt 18 by switching a flapper 22 is again sent to the predetermined location on the manuscript installation base 12 with the conveyance belt 18, after it is reversed with the reversal roller 20.

[0018] The scanner 4 arranged in the body 10 of equipment has the 1st mirror 26 which deflects the light source 25 of the fluorescent lamp which illuminates the manuscript D laid in the manuscript installation base 12, and the reflected light from Manuscript D in the predetermined direction, and these light source 25 and 1st mirror 26 are attached in the 1st carriage 27 arranged down the manuscript installation base 12. The 1st carriage 27 is arranged movable in parallel with the manuscript installation base 12, and both-way migration of the lower part of the manuscript installation base 12 is carried out with a drive

motor through the synchronous belt which is not illustrated.

[0019] Moreover, the manuscript installation base 12 and the 2nd carriage 28 movable in parallel are arranged in the lower part of the manuscript installation base 12. The 2nd and 3rd mirrors 30 and 31 of each other which deflect in order the reflected light from the manuscript D deflected by the 1st mirror 26 on the 2nd carriage 28 are attached in the right angle. The 2nd carriage 28 is moved in parallel along the manuscript installation base 12 to the 1st carriage by the synchronous belt which drives the 1st carriage 27 at the rate of one half while following to the 1st carriage 27.

[0020] Moreover, down the manuscript installation base 12, the image formation lens 32 which converges the reflected light from the 3rd mirror 31 on the 2nd carriage 28, and the CCD sensor 34 which receives and carries out photo electric conversion of the reflected light which converged with the image formation lens are arranged. The image formation lens 32 is arranged movable through a drive in a field including the optical axis of the light deflected by the 3rd mirror 31, and carries out image formation for the scale factor of a request of the reflected light because self moves. And the CCD sensor 34 carries out photo electric conversion of the reflected light which carried out incidence, and outputs the electrical signal corresponding to the read manuscript D.

[0021] On the other hand, the image formation section 6 is equipped with the laser aligner 40. The laser aligner 40 is equipped with the semiconductor laser 41 as the light source, the polygon mirror 36 which deflects continuously the laser beam by which outgoing radiation was carried out from semiconductor laser 41, the polygon motor 37 which carries out the rotation drive of the polygon mirror at a predetermined rotational frequency, and the optical system 42 led to the photo conductor drum which deflects and mentions the laser beam from a polygon mirror later.

[0022] According to the image information of the manuscript D read with the scanner 4, or facsimile transceiver document information, on-off control of the semiconductor laser 41 is carried out, this laser beam is turned to a photo conductor drum through the polygon mirror 36 and optical system 42, and it forms an electrostatic latent image on a drum peripheral surface by carrying out the exposure scan of the photo conductor drum peripheral surface.

[0023] Moreover, the image formation section 6 has the photo conductor drum 44 in which the rotation as image support of the body 10 of equipment mostly arranged in the center is free, a photo conductor drum peripheral surface is exposed by the laser beam from the laser aligner 40, and a desired electrostatic latent image is formed. the record medium fed to the perimeter of the photo conductor drum 44 from the electrification charger 45 which electrifies a drum peripheral surface in a predetermined charge, the development counter 46 which supplies the toner as a developer to the electrostatic latent image formed on the photo conductor drum peripheral surface, and is developed by desired image concentration, and the form cassette mentioned later -- that is, It has the exfoliation charger 47 for making copy paper P separate from a photo conductor drum in one. the cleaning equipment 50 which cleans the exfoliation pawl 49 which exfoliates a copy paper, and the toner which remained to the photo conductor drum peripheral surface from the imprint charger 48 which makes Form P imprint the toner image formed in the photo conductor drum 44, and a photo conductor drum peripheral surface -- and The electric discharge machine 51 which a photo conductor drum peripheral surface discharges is arranged in order.

[0024] the upper case cassette 52 in which the body of equipment to a cash drawer is possible respectively in the lower part within the body 10 of equipment, and the middle -- a cassette 53 and the lower-berth cassette 54 of each other are arranged by the laminating condition, and it is loaded with the copy paper from which size differs into each cassette. The mass feeder 55 is formed in the side of these cassettes, and about 3000 sheets of copy papers of size with high operating frequency, for example, the copy paper of A4 size, are contained by this mass feeder 55. Moreover, it is equipped with the sheet paper cassette 57 which served as the detachable tray 56 above the mass feeder 55 free [desorption].

[0025] In the body 10 of equipment, the conveyance way 58 which extends through the imprint section located between the photo conductor drum 44 and the imprint charger 48 from each cassette and the mass feeder 55 is formed, and the anchorage device 60 is formed in the termination of the conveyance way 58. An exhaust port 61 is formed in the side attachment wall of the body 10 of equipment which

countered the anchorage device 60, and the sorter 80 which classifies the discharged copy paper and which is mentioned later is connected with the exhaust port 61.

[0026] the upper case cassette 52 and the middle -- near the mass feeder 55 near a cassette 53, the lower-berth cassette 54, and the sheet paper cassette 57, the pickup roller 63 which picks out one sheet of form at a time from a cassette or a mass feeder is formed, respectively. moreover, the feed roller pair of a large number which convey copy paper P taken out with the pickup roller 63 through the conveyance way 58 in the conveyance way 58 -- 64 is prepared.

[0027] On the conveyance way 58, resist roller pair 65 is prepared in the upstream of the photo conductor drum 44. Resist roller pair 65 adjusts the tip of the toner image on the photo conductor drum 44, and the tip of copy paper P, and feeds copy paper P to the imprint section at the same rate as the passing speed of a photo conductor drum peripheral surface while it amends the inclination of taken-out copy paper P. The sensor 66 before ally NINGU which detects attainment of copy paper P is formed in the side, resist roller pair this side 64 of 65, i.e., a feed roller.

[0028] copy paper P taken out one sheet at a time from each cassette or the mass feeder 55 with the pickup roller 63 -- a feed roller pair -- 64 -- a resist roller pair -- it is sent to 65. and copy paper P -- a resist roller pair -- after ready grade of the tip is carried out by 65, it is sent to the imprint section. In the imprint section, the developer image formed on the photo conductor drum 44, i.e., a toner image, is imprinted on Form P by the imprint charger 48. Copy paper P by which the toner image was imprinted exfoliates from photo conductor drum 44 peripheral surface according to an operation of the exfoliation charger 47 and the exfoliation pawl 49, and is conveyed by the anchorage device 60 through the conveyance belt 67 which constitutes a part of conveyance way 58. and the anchorage device 60 -- a developer image -- copy paper P -- after [melting fixing ****] and copy paper P -- a feed roller pair -- it is led to a sorter 80 by 68 and delivery roller pair 69 through an exhaust port 61.

[0029] copy paper P which passed the anchorage device 60 down the conveyance way 58 -- being reversed -- again -- a resist roller pair -- the automatic double-sided equipment 70 sent to 65 is formed. Automatic double-sided equipment 70 temporarily accumulate copy paper P temporarily The accumulation section 71, The reversal way 72 which branches from the conveyance way 58, reverses copy paper P which passed the anchorage device 60, and is led to the accumulation section 71 temporarily, the pickup roller 73 which takes out at a time one copy paper P accumulated on the accumulation section temporarily, and the taken-out form -- the conveyance way 74 -- letting it pass -- a resist roller pair -- it has the feed roller 75 fed to 65. Moreover, the distribution gate 76 which distributes copy paper P to an exhaust port 61 or the reversal way 72 alternatively is established in the tee of the conveyance way 58 and the reversal way 72.

[0030] the pickup roller 73 when a double-sided copy was performed, after copy paper P which passed the anchorage device 60 was led to the reversal way 72 by the distribution gate 76 and the accumulation section 71 was temporarily piled up in the condition of having been reversed, and feed roller pair 75 -- the conveyance way 74 -- letting it pass -- a resist roller pair -- it is sent to 65. and copy paper P -- a resist roller pair -- after ready grade is carried out by 65, it is again sent to the imprint section and a toner image is imprinted by the rear face of copy paper P. Then, copy paper P is led to a sorter 80 through the conveyance way 58, an anchorage device 60, the delivery roller 69, and an exhaust port 61.

[0031] Hereafter, a sorter 80 is explained to a detail. The sorter 80 has the case 82 arranged together with the body 10 of equipment while connecting with the exhaust port 61. The side face of a case 82 in which it was located in the opposite side of the body 10 of equipment has opening 83. Moreover, in the case 82, the sort unit 84 which can go up and down is arranged along the perpendicular direction. The sort unit 84 has many bottles for accumulating the copy paper discharged from the body 10 of equipment, and these bottles are arranged by the laminating condition along the perpendicular direction.

[0032] These bottles contain the non sort bottle 85 arranged in the topmost non-classifying location, and the sort bottle 86 of a large number which the laminating was caudad carried out with the predetermined clearance between the non sort bottles 85, and have been arranged in the division location. And the non sort bottle 85 and the sort bottle 86 have extended from opening 83 to the way outside a case 82.

[0033] moreover, in a case 82, it counters with an exhaust port 61 and prepares -- having -- a delivery

roller pair -- the delivery roller 88 of the pair which discharges the copy paper sent by 69 on the non sort bottle 86, an exhaust port 61, and a delivery roller pair -- the guide idler 94 adjoined and prepared in the flapper 90 and flapper 90 which were located between 88, and the form sensor 92 which is located between an exhaust port 61 and a flapper 90, and detects attainment of a copy paper are formed.

[0034] the copy paper to which the flapper 90 has been sent from the delivery roller 69 -- a delivery roller pair -- between the discharge location led to 88, the division location which leads the copy paper sent from the delivery roller 69 to the sort bottle 86 side, and **s is prepared enabling free rotation, and between both locations is switched by the solenoid mentioned later.

[0035] Under the guide idler 94, the division roller 96 is arranged in a case 82, and the form sensor 99 and ** which detect the guide 98 to which the copy paper caudad turned by the flapper 90 is led to the division roller 96, and attainment of a copy paper are prepared between the guide idler 94 and the division roller 96.

[0036] According to the sorter 80 of the above-mentioned configuration, when the flapper 90 is switched to the division location, copy paper P discharged from the exhaust port 61 of the body 10 of equipment is sent to the division roller 96 with a flapper 90, a guide idler 94, and a guide 98. And copy paper P is discharged on the sort tray 86 which counters with these division rollers and is located with the division roller 96. Therefore, copy paper P can be discharged and classified one by one on the division roller 96 and the sort tray 86 which counters by carrying out a rise-and-fall drive by the elevator style which mentions the sort unit 84 later.

[0037] Next, the control system which controls division actuation of the form in which the image was formed by the digital copier constituted as mentioned above is explained. The control system is equipped with CPU100 as a control means as shown in drawing 2. The control panel 110 as a setting means, the empty sensor 9 formed in ADF7, the form sensor 92 formed in the upstream of a flapper 90, the form sensor 99 formed in the upstream of the division roller 96, and ROM112 in which the control data was stored are connected to CPU100 through the input interface 102.

[0038] Moreover, the drive controller 106 is connected to CPU100 through the output interface 104. The solenoid 114 switched between the discharge locations and division locations which mentioned the flapper 90 above, the motor 116 which drives the delivery roller 88, the motor 118 which drives the division roller 96, and the rise-and-fall motor 120 which operates the elevator style 122 and goes up and down the sort unit 84 are connected to the drive controller 106.

[0039] In addition, the delivery roller 88, the flapper 90, the division roller 96, and the sorter 80 containing the elevator style 122 constitute the division means of this invention. Next, division actuation (1st division actuation) of a form when auto sort mode is set up in the digital copier of this invention constituted as mentioned above is explained using drawing 3. In addition, auto sort mode means that a sorter 80 chooses sort mode (division mode) automatically a condition [the manuscript having been laid in ADF7]. Therefore, when auto sort mode is set up, the form with which the image was formed is delivered to a sort bottle according to the number of **. Moreover, the number of ** said here points out the number of groups (number of sheets) of the form which copies the image of 1 set (or one sheet) of manuscripts, and is obtained. For example, when two or more manuscripts are laid in ADF7 and three ** are set up in a control panel 110, the image of each manuscript is copied by a unit of 3 times, respectively, and this copied form is put together, respectively and is delivered to 1 thru/or sort [the 3rd step of] bottle.

[0040] First, the auto sort mode mentioned above through the control panel 110 as initial setting of a digital copier is set up (step 121). And Manuscript D is set to ADF (step 122), the number of ** is set up through a control panel 110 (step 123), and copy actuation is started according to this number of ** (step 124).

[0041] If auto sort mode is set up as shown in step 121, a solenoid 114 will operate automatically a condition [Manuscript D having been set to ADF7 like step 122], and a flapper 90 will be set as a division location. Thereby, the form with which the image was copied is discharged automatically in a division location.

[0042] If Manuscript D is set to ADF7, the empty sensor 9 shown in drawing 4 will operate. This empty

sensor 9 is equipped with actuator 9a which rotates with the manuscript D laid in ADF7, and detection section 9b which detects rotation of this actuator 9a. As shown in drawing 4 (a), actuator 9a rotates, where Manuscript D is laid in ADF7, and as shown in drawing 4 (b), when Manuscript D is not laid in ADF7 that is, when the last manuscript D is sent to a read station, it is returned to a criteria location. Detection section 9b detects that the number of Manuscripts D is [two or more] while detecting those with a manuscript, when rotation of actuator 9a is detected, and when it is detected that actuator 9a is in a criteria location, while detecting those without a manuscript, it detects that the manuscript D sent to the read station is the last one sheet.

[0043] If copy actuation is started in the auto sort mode mentioned above, it will be judged first whether the number of ** inputted through the control panel 110 is 1 (step 125). When one ** is judged, and the tip of a form is detected by the form sensor 92, a flapper 90 rotates in a discharge location by the solenoid 114, the delivery roller 88 operates by the motor 116, and a form is delivered to the non sort bottle 85 (step 126).

[0044] On the other hand, when one ** is not judged (i.e., when the number of ** is plurality), according to the detection result by the empty sensor 9, it is judged whether the number of Manuscripts D is [two or more] (step 127). When it is judged that the number of Manuscripts D is [two or more], and the tip of a form is detected by the form sensor 99, the division roller 96 operates by the motor 118, and a form is delivered to the sort bottle 86 (step 128). In this case, the elevator style 122 is moved by the rise-and-fall motor 120 according to the set-up number of **, and a form is classified to the predetermined sort bottle 86. Moreover, when it is not judged in step 127 that the number of Manuscripts D is [two or more], a form is delivered to the non sort bottle 85 like step 126 mentioned above.

[0045] In the division actuation mentioned above, while starting copy actuation, it controlled to judge the number of ** and to judge manuscript number of sheets after that, but after judging manuscript number of sheets, actuation may be controlled to judge the number of **.

[0046] In this case, if manuscript number of sheets is judged (step 135) and it is judged that the number of Manuscripts D is one at the same time it starts copy actuation as shown in drawing 5 as step 124, a form will be delivered to the non sort bottle 85 like step 126. On the other hand, decision of that the number of Manuscripts D is [two or more] judges the number of ** (step 137). And if one ** is judged, according to step 126, a form will be delivered to the non sort bottle 85, and if it is judged that the number of ** is plurality, a form will be delivered [paper] to it and classified into the sort bottle 86 according to step 128.

[0047] It turns out that what is necessary is to deliver a form to the non sort bottle 85 the above result according to step 126 when one ** is judged, and when it is judged that there is a manuscript number of sheets, and just to carry out motion control so that a form may be delivered to it paper and classified into the sort bottle 86 according to step 128, when other (i.e., when the number of ** is plurality and there is two or more manuscript number of sheets).

[0048] Therefore, in the example mentioned above, in auto sort mode, when the number of ** is 1, or when there is a manuscript number of sheets, sort mode can be canceled temporarily, and it can control to discharge the form with which the image was formed into the non sort bottle 85. For this reason, the problem at the time of the conventional auto sort mode, i.e., a form, forgets to take, or problems, such as form futility by the re-copy, can be abolished.

[0049] In addition, this invention is not limited to the example mentioned above, and is variously deformable within the limits of this invention. For example, this invention may be applied to other image formation equipments, such as not only a digital copier but an analog copying machine.

[Translation done.]

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DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1] Drawing 1 is the schematic diagram showing the image formation equipment of this invention.

[Drawing 2] Drawing 2 is the block diagram showing the control system which controls division actuation of the sorter built into the image formation equipment of drawing 1.

[Drawing 3] Drawing 3 is a flow chart for explaining division actuation of the 1st of the sorter built into the image formation equipment of drawing 1.

[Drawing 4] Drawing 4 is drawing for explaining the actuation of an empty sensor prepared in ADF included in the image formation equipment of drawing 1.

[Drawing 5] Drawing 5 is a flow chart for explaining division actuation of the 2nd of the sorter built into the image formation equipment of drawing 1.

[Description of Notations]

4 [-- Empty sensor,] -- A scanner, 6 -- The image formation section, 7 -- ADF, 9 10 [-- A case, 83 / -- Opening,] -- The body of equipment, 61 -- An exhaust port, 80 -- A sorter, 82 84 -- A sort unit, 85 -- A non sort bottle, 86 -- Sort bottle, 88 [-- A guide, 100 / -- CPU, 110 / -- A control panel, 114 / -- 116 A solenoid, 118 / -- A motor, 120 / -- A rise-and-fall motor, 122 / -- Elevator style.] -- A delivery roller, 90 -- A flapper, 96 -- A division roller, 98

[Translation done.]

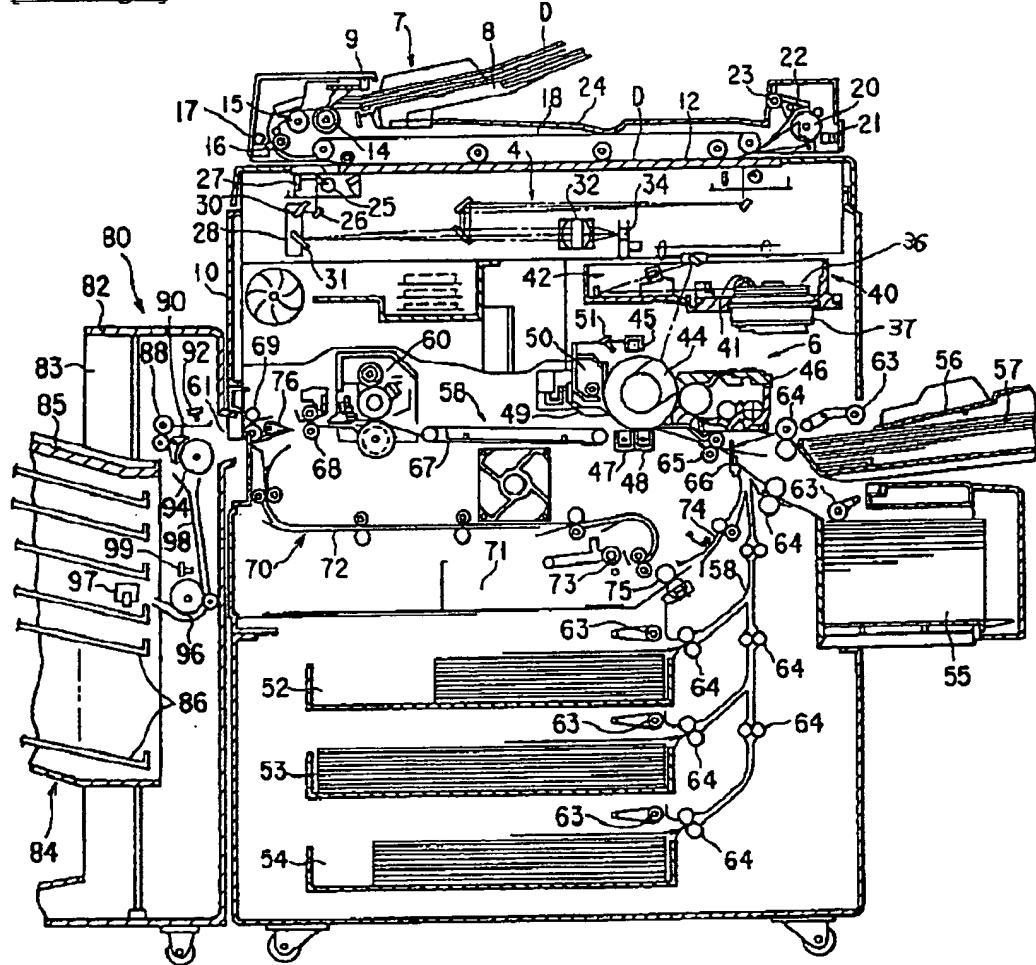
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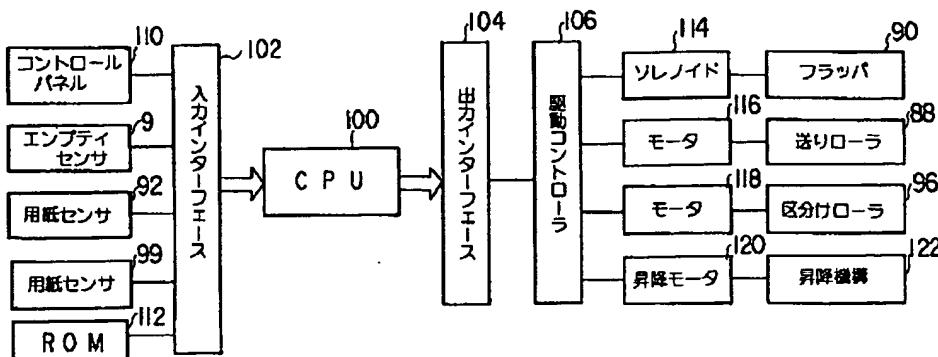
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DRAWINGS

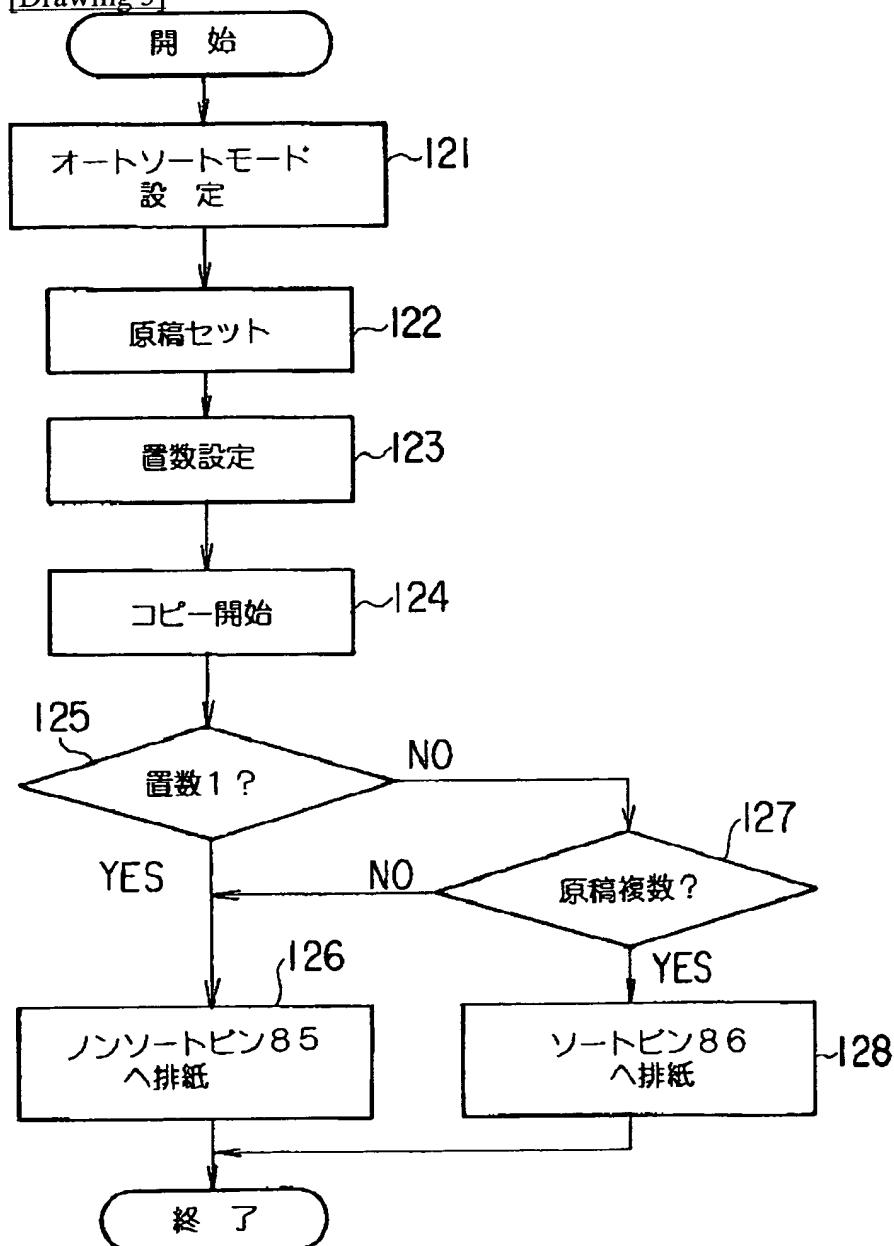
[Drawing 1]



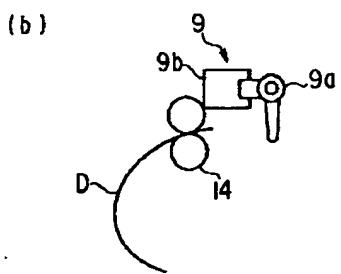
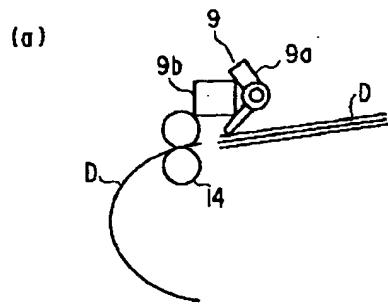
[Drawing 2]



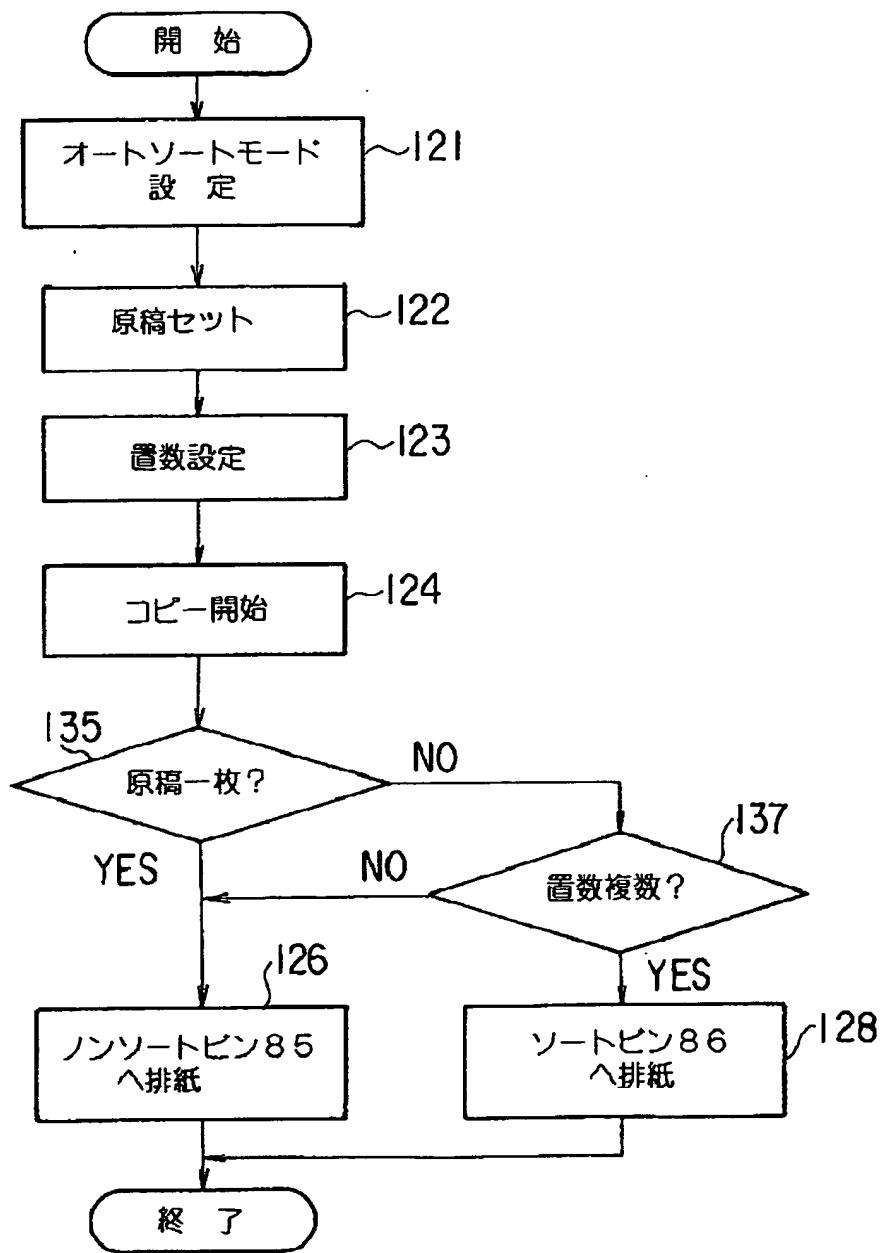
[Drawing 3]



[Drawing 4]



[Drawing 5]



[Translation done.]